

Industrial Standardization

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1937

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RCA Manufacturing Company, Camden, N. J.**

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No. 3

Basic Data on Exhaust Systems Aids Control of Toxic Dusts, Gases

ASA committee analyzes basic principles underlying efficient exhaust system design and operation

Effective dust and gas control would help more than million workers; save thousands of dollars to industry

by
Cyril Ainsworth

*Secretary, Sectional Committee
on Safety Code for Exhaust Systems*

industrial processes to which local exhaust ventilation is today being applied.

To fill this need a report covering the basic requirements and principles of design common to all exhaust systems has been developed by a sub-committee of the ASA Sectional Committee on Exhaust Systems working under the leadership of the International Association of Industrial Accident Boards and Commissions. The report is entitled *Fundamentals Relating to the Design and Operation of Exhaust Systems*. It has just been published and through its pages much valuable data is now available to industry. In fact it is the first step in developing the much-needed separate specifications for individual industries and processes upon which the committee is working.

In the introduction to the report the committee points out that since most state codes require only the development of a definite amount of static suction as an indication of exhaust system efficiency, it has been the general practice simply to check this value rather than to test new exhaust systems to determine the actual degree of control effected. The considerable experience gained in the design of exhaust systems has not been evaluated and systematized and made generally available to engineers. Personal experience has been the principal guide to design.

DANGER to industry from dust diseases is being recognized today as one of the outstanding problems of industrial America. It affects some 1,200,000 workers in many of our leading industries and is costing us many thousands of dollars yearly in insurance costs and in compensation cases.

One of the most important means of control of industrial health hazards is local exhaust ventilation. It is the method used more extensively than any other for eliminating toxic or otherwise harmful dusts, fumes, vapors, and gases before they can reach the lungs of employees. Many state regulations contain requirements for the design of exhaust systems used in connection with hazardous industrial processes like spray painting and electroplating, but as Theodore Hatch of Harvard University has pointed out in the March, 1936, issue of *INDUSTRIAL STANDARDIZATION* these regulations are based chiefly on conditions existing in a few industries and are not, therefore, adequate to meet the needs of the great variety of

The present report is an attempt to assemble in ordered fashion the fundamental concepts and data available at this time and to indicate the manner in which these influence the method of design. The committee emphasizes that the report is not complete. A great deal of systematic and critical analysis of existing systems is necessary in order to build up a body of technical experience to serve as a guide for future design. However, the present report is the first step in replacing individual experience by established fact in one of industry's worst occupational disease hazards, and the committee hopes that not only will the report be of value to those designing and installing new exhaust systems but that through it the users of the code will furnish the committee with practical data obtained from the application of the principles to new systems and to the rest of existing equipment.

In tackling the problem of exhaust system design the committee first sets up standard definitions for the much misused terms dusts, fumes, mists, vapors, gases; and then proceeds to develop

the basic principles governing plant layout and basic construction. A poorly planned building may defeat the efficiency of the best designed exhaust system or may very greatly increase the cost of the initial installation and of maintaining its efficiency.

Exhaust Hoods

The report deals mainly with principles of exhaust hoods which have not previously been clearly understood or defined. The committee definitely states that *the primary purpose of an exhaust hood is to confine and exhaust contaminated air rather than to remove the contaminated material from the air.* Vapors and gases escaping into the atmosphere at approximately the same density as the room air are dispersed primarily by air movement; and in order to prevent this it is necessary to eliminate or otherwise to control the energy of dispersion—which means, in most cases, the control of air motion. This concept directs attention at once to the primary point of attack, the source

National Organizations Help Prepare Exhaust Code Report

The report was prepared by a subcommittee of the ASA committee on Exhaust Systems (Z9), which includes representatives of 23 national organizations working under the administrative leadership of the International Association of Industrial Accident Boards and Commissions.

Members of the general committee are:

John Roach, International Association of Governmental Labor Officials, Chairman

Cyril Ainsworth, American Standards Association, Secretary

International Association of Industrial Accident Boards and Commissions, **Verne A. Zimmer**

American Foundrymen's Association, **James R. Allan, O. E. Mount (alt.)**

American Public Health Association, **Henry Field Smyth**

American Society of Heating and Ventilating Engineers, **William M. Wallace II**

American Society of Mechanical Engineers, **J. C. Hardigg, E. H. deConingh (alt.)**

Association of Manufacturers of Wood Working Machinery, **F. G. Walker**

Foundry Equipment Manufacturers Association, **S. C. Vessy, V. E. Minich (alt.)**

Grinding Wheel Manufacturers Association, **A. Rousseau**

International Association of Governmental Labor Officials, **John Roach**

Manufacturing Chemists' Association of the U. S., **H. L. Miner**

National Association of Fan Manufacturers, **H. M. Nichols, W. F. Wrightson, W. Gardner (alt.)**

National Association of Mutual Casualty Companies, **S. E. Whiting**

National Bureau of Casualty & Surety Underwriters, **R. C. Stratton, W. M. Graff (alt.)**

National Electrical Manufacturers Association, **R. W. Monroe, G. E. Sanford (alt.)**

National Founders Association, **T. W. Pangborn, E. O. Jones (alt.)**

National Safety Council, **J. C. Wilson, J. E. Culliney (alt.)**

National Spray Painting and Finishing Association
U. S. Department of Agriculture, Bureau of Chemistry and Soils, **Hylton Brown, Roy L. Hunt (alt.)**

U. S. Department of Interior, Bureau of Mines, **H. H. Schrenk, Dan Harrington (alt.)**

U. S. Department of Labor, **Roy Kelsay**

U. S. Department of Labor, Bureau of Labor Statistics, **Swen Kjaer**

U. S. Navy Department, Bureau of Construction and Repair

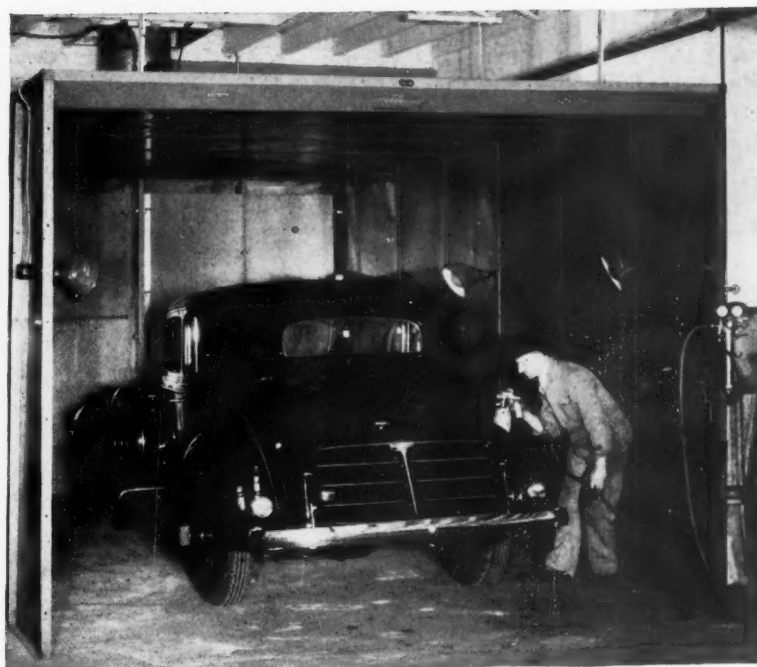
U. S. Treasury Department, Bureau of Public Health Service, **J. J. Bloomfield, J. M. DallaValle (alt.)**

Members-At-Large, **L. A. DeBlois, Philip Drinker, Leonard Greenburg, William J. McConnell**

Mr. Theodore Hatch, Division of Industrial Hygiene, New York State Department of Labor, is chairman of the subcommittee which drafted the report.

**An exhaust system
protects this workman
from the toxic spray
of his paint gun**

Courtesy of DeVilbiss Co.



of air motion—fan-action of rotating wheels, badly placed exhaust ports, room temperature changes, and the like—before one even considers the question of hood design.

The report next emphasizes the two basic factors in hood design: (1) air velocities created in the zone of hood influence which must be great enough to counteract the outward velocity of contaminated air and the influence of outside air currents and drafts and (2) volume of air flowing into the hood per minute. To guide the designer in his calculations the committee, through measurement of actual air velocities generated by exhaust hoods now operating with known efficiency, has worked out a table of minimum air velocities required to capture certain specific dusts and vapors. The table is far from inclusive. It shows the need for more of the type of research that has gone into the present report, but at least it indicates the manner in which such basic information may be obtained.

Propose Velocity Pressure

Engineers will find much to interest them in the section of the report devoted to static suction and methods of measurement. Static suction at the throat of the hood has for some years been employed as an index of hood operation, although as the report points out it does not constitute a basic specification for hood design. As an alternative, the committee suggests that the determination of velocity pressure in the

branch pipe provides a more accurate measure of airflow than can possibly be given by the static suction method.

A table of miscellaneous pressure losses with diagrams to illustrate the various types of elbows, bends, and points most commonly met with in exhaust piping construction will help the engineer in his calculation of the required airflow. A pressure graph for determining fan and motor capacity for simple exhaust systems is also included.

Air Cleaning

Collection of poisonous dusts and gases at the point of generation and their transportation to a central place is not the sum total of an efficient exhaust system's functions. Contaminated air must still be gotten rid of, or stored, or cleaned, if the whole usefulness of the plant is not to be destroyed. Air cleaning is required for several reasons: to prevent the creation of a nuisance or hazard in the area around the outlet, to prevent the recontamination of plant air from the outside, to permit recirculation of air discharged from the exhaust system in the plant. When air is intended for complete recirculation the most rigid cleaning requirements must be met. Even when contaminated air is to be disposed of, considerations such as the height of the stack through which it escapes, the nature and concentration of escaping material, as well as local meteorological conditions like downdraft winds and eddies

around buildings must be carefully checked by the exhaust system engineer.

These are some of the very fundamental problems relating to the design and operation of exhaust systems which the report takes up.

It is intended as a guide to those desiring to install and use exhaust systems, as well as to the manufacturer and designer. It is also intended as a guide to regulatory bodies. Insurance men, engineers, and public health officers faced with

the problem of safeguarding employers from occupational disease hazards are in constant need of the basic data that the report contains.

The setting down of fundamental engineering principles common to all toxic dust and gas control is the first step in developing a set of separate standard specifications for each distinct process or industry in which the occupational disease hazard is present. Criticism of the present report should help to build up a body of technical experience on which to base future action in industry's struggle against the occupational disease hazards of toxic dust and gas.

Campaign Against Dust Diseases Shows Unified National Effort

The American Standards Association is cooperating closely with other national agencies for the solution of the industrial disease problem. V. A. Zimmer, Director of the Division of Labor Standards of the U. S. Department of Labor, announced last year that "a plan has been worked out with the American Standards Association whereby the work of this Division will be largely confined to subjects not yet covered by the Association. A clearance arrangement will assure critical analysis and expert appraisal before promulgation of any codes that are adopted."

Similarly there is close cooperation between the Association and the Air Hygiene Foundation of America, set up by leading companies in the steel, mining, glass, foundry, and kindred industries affected by the hazards of occupational disease, and which is carrying on research at the Mellon Institute in Pittsburgh.

A national committee of eminent toxicologists and pathologists headed by Dr. R. R. Sayers, Senior Surgeon of the U. S. Public Health Service, is also working with the American Standards Association in an advisory capacity to set up threshold limits beyond which the presence of harmful gases, vapors, fumes, dusts, and mists becomes a menace to employees. Its findings will be used by the technical committees in developing separate standard specifications for exhaust hood design and air velocities for each distinct process or industry in which the occupational disease hazard is present.

ASA Represented at Silicosis Conference

The final session of the National Conference on Silicosis of the U. S. Department of Labor was held in Washington on February 3. Reports from committees on medical, engineering, administration and legal, economic, and insurance phases of the problem were presented and discussed.

In the report of the engineering committee, the fundamentals of design and operation of exhaust systems as prepared by the Sectional Committee on Exhaust Systems and recently published by the American Standards Association, and the safety codes for the protection of the heads and eyes and the respiratory organs of industrial workers were specifically mentioned.

The American Standards Association was represented in the committee work of the conference by Dr. P. G. Agnew, ASA secretary, and Cyril Ainsworth, assistant secretary.

Any one desiring copies of the reports of the various committees of the conference should write to Verne A. Zimmer, Division of Labor Standards, U. S. Department of Labor, Washington, D. C.

New York Safety Council Holds Annual Convention

The Eighth Annual Convention of the Greater New York Safety Council will be held in New York, April 13-15. Forty sessions on as many different phases of the accident prevention program, as well as an exhibit of safety equipment and activities, will be features of the convention.

The American Standards Association is one of the 66 cooperating agencies.

Copies of the program and registration blanks may be obtained from the ASA office.

New Spindle Noses and Chucks Represent Advance in Design

by
J. E. Lovely¹

Chairman, Technical Committees on Spindle Noses and Collets and on Chucks and Chuck Jaws of the Sectional Committee on Small Tools and Machine Tool Elements

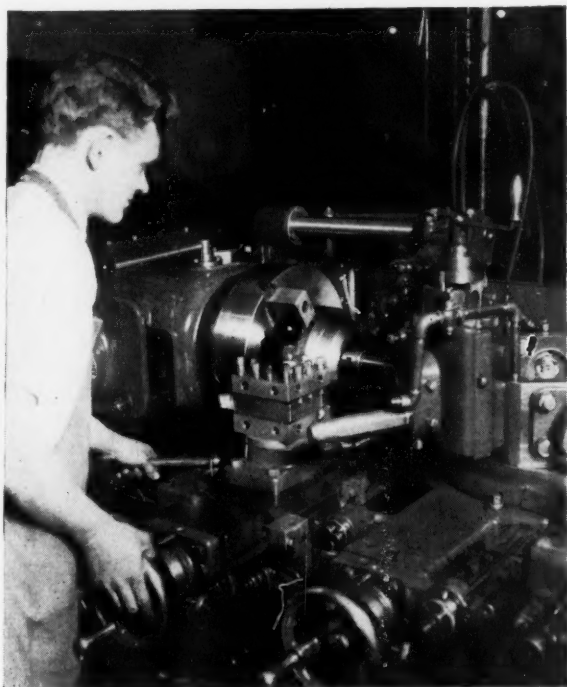
American Standard allows chucks and fixtures to interchange on turret, automatic, and engine lathes

New safety features are included

THE new American Standard Lathe Spindle Noses and the new American Standard Chucks, recently approved by the American Standards Association, serve a long-felt need in enabling the user to interchange chucks and fix-

tures on different makes of turret lathes, automatic lathes, and engine lathes. In addition, these new standards represent a great advance in design and performance that will be appreciated by users and builders of lathes alike throughout industry.

A great deal of credit is due the large number of machine-tool builders and chuck manufacturers who have cooperated so splendidly and wholeheartedly during the last eight years with the Sectional Committee on the Standardization of Small Tools and Machine Tool Elements and its technical committees, in all the processes of the development of this series of spindles and chucks. The large expense incurred during the last eight years by many of these manufacturers and the great amount of time contributed by many of the committee members has borne fruit splendidly and all who have been engaged in this work can



Turret lathe at work. American Standard spindle noses and chucks are used on lathes of this type.

Courtesy Jones and Lamson Machine Co.

¹Vice-President and Chief Engineer, Jones and Lamson Machine Co., Springfield, Vermont.

**Fig. 1**

Lathe spindles with American Standard spindle noses. The entire American Standard series of sizes is designed for use on engine or turret lathes ranging from the smallest to the largest now being made.

be commended generously for the part they have contributed.

These new spindles furnish a more rigid mounting of chucks and fixtures than previous threaded noses, or earlier forms of flanged spindles, and provide a degree of accuracy in alignment and interchangeability previously considered impossible. They overcome the long-recognized objections of the threaded nose, remove the danger of chucks coming loose at high speeds when the spindle brake is applied or the spindle is reversed, and they allow chucks to be changed easily and quickly whenever required.

These new American Standards were approved by the turret lathe group and the automatic lathe group of the National Machine Tool Builders' Association about two years ago and are now available on most of the new models of turret lathes and automatic lathes made in this country today. In addition, two of the prominent engine lathe builders are now furnishing all of their en-

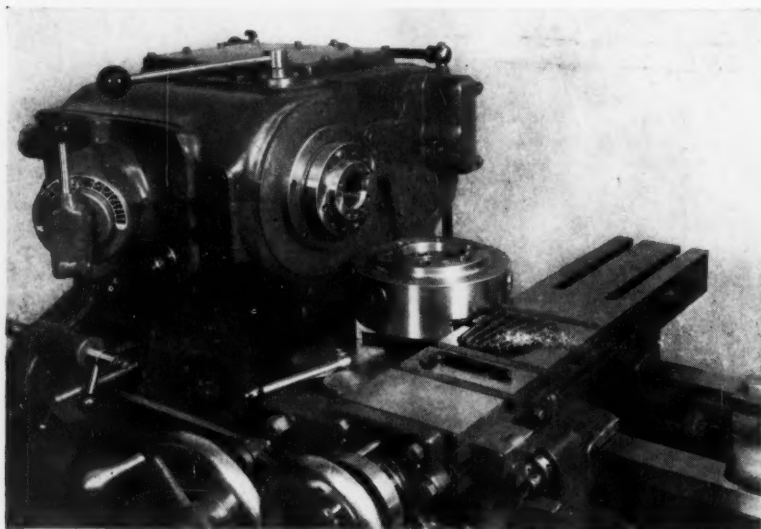
gine lathes with these new spindle noses and most of the other engine lathe builders are in a position to furnish them on demand.

The new American Standard chucks are also in production and may be obtained readily from most of the chuck manufacturers or may be secured as regular equipment through any of the machine tool builders making machines with the new standard spindles.

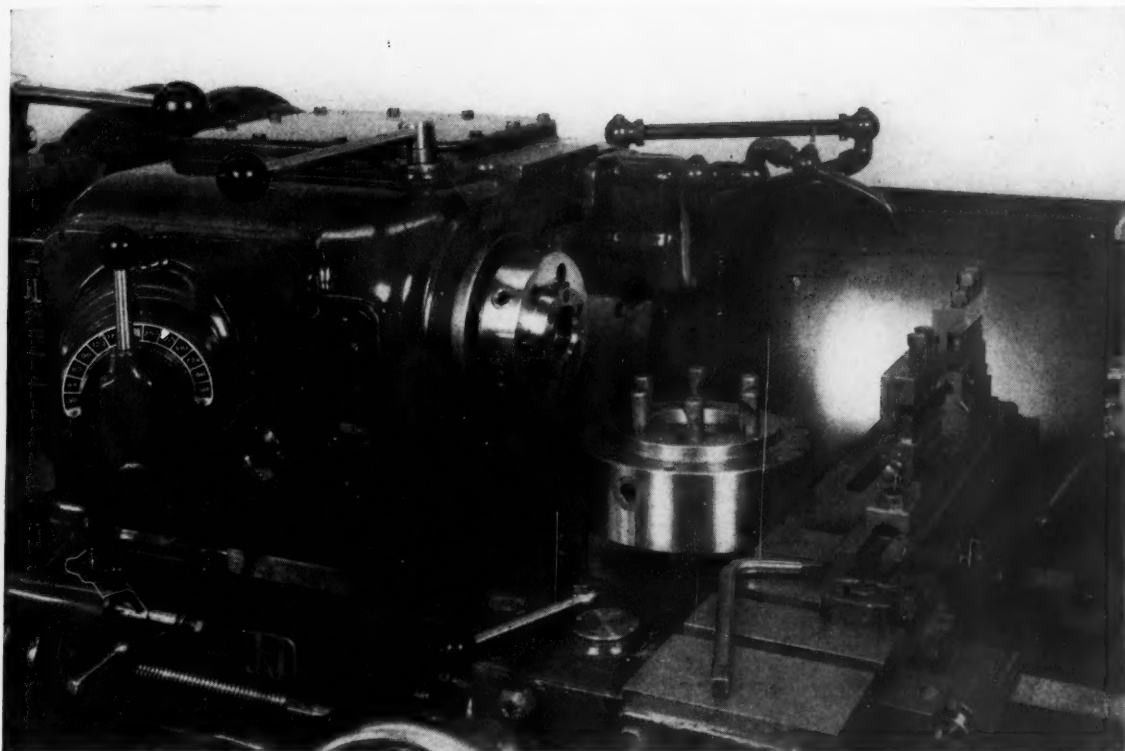
Fig. 1 shows a group of lathe spindles having respectively a 6 in., 8 in., and 11 in. Type A1 American Standard Lathe Spindle Nose. The complete series comprises two spindle noses smaller than those shown and two larger, the whole series covering a range suitable for the smallest lathes to the largest regularly being manufactured. The largest nose in the series is known as the 20 in. nose, and will accommodate holes up to 15 in. in diameter.

Fig. 2 shows a Turret Lathe equipped with a 6 in. Type A1 American Standard Lathe Spindle Nose and shows the mating 10 in. American Standard chuck. The chuck in this case is attached by socket head cap screws passing through the chuck inside the scroll.

Fig. 3 shows another Turret Lathe equipped with a 6 in. Type D1 American Standard Lathe Spindle Nose, also the mating 10 in. American Standard Chuck. The chuck in this case is the same as the one shown in Fig. 2 except that it is held in position on the spindle nose by means of the six cam lock studs shown projecting from the back of the chuck, which are engaged by the cams provided with square sockets in the flange of the spindle nose. This D1 form of nose provides means for a quick change of chucks and fixtures and is recommended for use where the time required for changing chucks should be kept to the

**Fig. 2**

Turret Lathe equipped with 6-inch Type A1 American Standard Lathe Spindle Nose, showing the mating with a 10-inch American Standard chuck.

**Fig. 3**

Turret lathe equipped with 6-inch Type D1 American Standard Lathe Spindle Nose, with mating 10-inch American Standard chuck. This form provides for a quick change of chucks and fixtures. Because taper pilots on both Type A1 and D1 spindles are the same diameter, chucks and fixtures may be interchangeable on both types.

minimum. Both the Type A1 and D1 spindles have the same diameter taper pilots and the same location of the outer bolt circles, so that chucks and fixtures may be made interchangeable on both types.

All of these spindles are provided with a taper pilot and all fixtures and chucks are made to give a tight fit on the pilot when drawn back against the flat face. This feature allows the spindle to be reconditioned at any time should the pilot become worn or the face mutilated, because the original size on the taper pilot may be obtained by grinding back on the face and re-grinding the pilot.

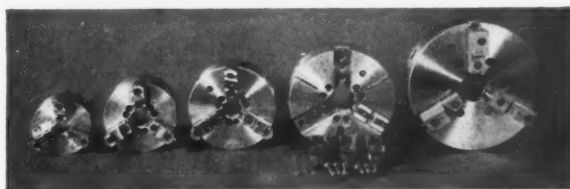
Fig. 4 shows a group of the new American Standard Chucks. The chucks illustrated are the 6 in., 8 in., 10 in., 12 in. and 15 in. sizes. The pamphlet referred to below establishes controlling dimensions of all chucks from 6 in. to 36 in. in diameter in both medium-duty and heavy-duty types. Both of these types have master jaws of the tongue and groove type and dimensions have been established making the top jaws inter-

changeable. An extra-heavy series of chucks with serrated master jaws has also been established and are described in the same pamphlet. Dimensions have been established for power-operated and hand-operated chucks of the two-jaw, three-jaw, and four-jaw type, the top jaws being interchangeable on power-operated and hand-operated chucks of the same outside diameter.

The new American Standard Chucks may be mounted directly on the American Standard Lathe

Fig. 4

American Standard chucks in 6-inch, 8-inch, 10-inch, 12-inch & 15-inch sizes



Spindles without having to be fitted to the individual spindle. The taper pilot and the flat face on the spindle insures chucks and fixtures running true within a fraction of a thousandth of an inch

even when transferred from one machine to another.

The rigid mounting employed enables these new spindles and chucks to be admirably suited for modern high-production service under the high speeds encountered today.

So far these new spindle noses and chucks have been approved and accepted by the American Standards Association for turret lathes and automatic lathes only, but the Sectional Committee on the Standardization of Small Tools and Machine Tool Elements, as well as its technical committees connected with this development, feel that they are equally adapted to engine lathes and hope that their use will finally become universally extended to engine lathes by all the prominent builders of these machines.

Used on Grinding Machines

These spindles may be used equally as well on the work spindles of grinding machines, as well as many types of special machines.

Dimensions, specifications, and working tolerances of these new American Standard Lathe Spindle Noses are given in the American Standard Lathe Spindle Noses for Turret Lathes and Automatic Lathes (B5.9-1936) now available. The new chucks referred to are described in the American Standard Chucks and Chuck Jaws for Turret Lathes and Automatic Lathes (B5.8-1936). Both of these pamphlets may be obtained through the American Standards Association. Copies of the standards on chucks and chuck jaws are 45 cents; copies of the standards on lathe spindle noses are 50 cents.

Members of the ASA are entitled to 20 per cent discount when ordering American Standards through the ASA office.

Four New Standards Adopted Under Canadian Electrical Code

Four new specifications outlining conditions which must be met by electrical equipment for sale in Canada have been approved under the Canadian Electrical Code by the Canadian Engineering Standards Association.

The new specifications are:

- Construction and test of panelboards No. 29
- Construction and test of low-voltage control-circuit wire and cable No. 35
- Construction and test of cutout bases No. 39
- Construction and test of cabinets and cutout boxes No. 40

Many of the provinces of Canada have officially adopted the Canadian Electrical Code, making use of unapproved electrical equipment illegal in those provinces.

Machinery Experts Supervise Machine Tool Standardization

The basic standardization program on small tools and machine tool elements of the American Standards Association, which included as one of its phases the preparation of the new American Standards for lathe spindles and chucks and chuck jaws, is carried on under the supervision of a committee made up of experts in tool building and machinery problems.

Many technical committees and subcommittees on a wide variety of machine-tool problems do the detailed background work on new standards, recommending their findings to the general committee for study and final recommendation.

The American Society of Mechanical Engineers, the National Machine Tool Builders Association, and the Society of Automotive Engineers share the administrative responsibility for the committee's work.

Members of the Sectional Committee on Small Tools and Machine Tool Elements (B5) are:

C. W. Spicer, Society of Automotive Engineers, *Chairman*

Frank O. Hoagland, National Machine Tool Builders Association, *Vice-Chairman*

Joseph A. Anglada, Society of Automotive Engineers, *Secretary*

American Society of Mechanical Engineers (Sponsor), **Fred H. Colvin**, **Harry E. Harris**, **Simon MacKay**, **W. C. Mueller**, **E. R. Norris**

National Machine Tool Builders Association (Sponsor), **J. B. Armitage**, **Solomon A. Einstein**, **Frank O. Hoagland**, **C. W. Machon**, **William L. Miller**, **A. L. Stewart**

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Standards Committees Report Progress On Important Electrical Problems

THIRTEEN outstanding electrical standards have been completed and approved by the American Standards Association during the past year, and many others are nearing completion, according to the reports on 1936 accomplishments presented by the committees in charge of electrical standardization projects to the Electrical Standards Committee of the ASA.

The reports, published below, show that important new standards were completed during 1936 on power-operated radio receiving appliances, tree-wire coverings, and specifications for rubber insulation for wire and cable. Changes in ten electrical standards on a variety of subjects—dry cells and batteries, rotating electrical equipment for railway cars and locomotives, electrical insulating oils, wires and cables—were completed and approved.

One committee is considering seven new standards on power switchgear, and proposals for standards on radio, electrical measuring instruments, rolled threads for screw shells of electric sockets and lamp bases, and transformers, are being completed. Approximately 6,000 definitions of electrical terms are included in a proposed standard which is in the final stages before being submitted for approval.

The committees have been active in cooperation on international standardization proposals, by furnishing advice and information to the United States National Committee of the International Electrotechnical Commission. Circuit breakers, electric welding apparatus, transformers, and electric and magnetic magnitudes and units are some of the subjects on which international action has been suggested.

The organizations which are responsible for the administrative leadership of the committees

Thirteen new and revised standards include such widely used products as radio receiving appliances, insulation for wire and cable, dry cells and batteries, electrical insulating oils

Twenty-nine committees present annual reports on year's progress

are listed following each report. In cases where only the name of the chairman or secretary is listed, the Electrical Standards Committee itself has taken responsibility for the committee.

The committee reports, as presented to the Electrical Standards Committee, follow:

National Electrical Code (C1-1935)—The next biennial revision of the National Electrical Code is scheduled for 1937. It is expected that the forthcoming edition will employ an entirely new format or editorial arrangement, the outcome of very intensive study by a subcommittee during 1935 which was accepted at a special meeting of the Electrical Committee in April of this year.

The recognition in the National Electrical Code of uninsulated grounded conductors for circuits within buildings, as proposed by certain groups represented in the sectional committee, and vigorously opposed by groups both of and without the committee organization, will not be advanced until the so-called American Research Committee on Grounding releases its findings on this fundamental matter.

This project goes forward under the sectional committee procedure. A. R. Small is chairman; V. H. Tousley is secretary of the sectional com-

Electrical Standards Committee Heads ASA Electrical Work

Directing and coordinating the work of the committees on electrical standardization projects under the American Standards Association, the Electrical Standards Committee represents all branches of the electrical industry. It reports its findings on completed standards and proposed new projects to the ASA Standards Council. Eighteen members, representing 12 organizations, are on the committee.

These members, with three representatives of the American Society of Mechanical Engineers and a group of members-at-large, act as the United States National Committee of the International Electrotechnical Commission. This committee handles all problems arising in connection with international decisions on standards for electrical equipment.

The members of the Electrical Standards Committee are:

- American Institute of Electrical Engineers, *A. M. MacCutcheon, Edward L. Moreland, Dr. H. S. Osborne, H. E. Farrer (alt.), E. B. Paxton (alt.), R. E. Hellmund (alt.)*
- American Society for Testing Materials, *F. M. Farmer, C. L. Warwick (alt.)*
- ASA Electric Light and Power Group (Association of Edison Illuminating Companies; Edison Electric Institute), *H. B. Gear, P. H. Chase, Howard P. Seelye, Alexander Maxwell (alt.), H. S. Ben-nion (alt.), A. B. Campbell (alt.)*
- ASA Fire Protection Group (Associated Factory Mutual Fire Insurance Companies; National Board of Fire Underwriters; National Fire Protection Association; Underwriters' Laboratories), *A. R. Small, R. B. Shepard (alt.)*
- ASA Communications Group (Bell Telephone System), *H. L. Huber, S. B. Graham (alt.)*
- American Transit Association, *Charles Rufus Harte, W. J. Quinn (alt.)*
- Association of American Railroads, *Sidney Withington*
- Institute of Radio Engineers, *Ray H. Manson, Harold P. Westman (alt.)*
- National Bureau of Standards, *E. C. Crittenden, Dr. J. Franklin Meyer (alt.)*
- National Electrical Manufacturers Association, *S. L. Nicholson, E. D. Youmans, L. F. Adams (alt.), T. E. Burnum (alt.), Frank Thornton, Jr. (alt.), H. H. Weber (alt.)*
- U. S. Navy, Chief, Specification Section, Design Division, Bureau of Engineering; *J. B. Lunsford (alt.)*
- U. S. War Department, *Colonel Alvin C. Voris, Lieut. Col. Stewart W. Stanley (alt.)*

mittee. For the present, the scope remains as stated in the ASA Year Book. However, studies now under way in the committee and in the National Fire Protection Association executive office may later produce a modified and perhaps improved statement.

Eighteen organizations are represented in the sectional committee by 43 voting members and 41 alternates. In addition, eight organizations have special voting memberships with respect to chapters of the Code of immediate interest to them.—*National Fire Protection Association.*

National Electrical Safety Code (C2-1927)—There has been no activity in this committee for a number of years, but in the opinion of some it is becoming urgent that a revision be undertaken.

The sponsors have already submitted a proposal to the Electrical Standards Committee that one sectional committee handle the revision instead of two separate committees as was the case at the time the standard was last revised. It is understood that when it comes time for a revision, the question of revising the scope should be considered.—*National Bureau of Standards.*

Terminal Markings for Electrical Apparatus (C6)—A complete revision of this American Standard (C6-1925), which was in use for ten years, extends the provisions of the standard to markings for an indefinite number of terminals on any motor. A new section giving markings for terminals on industrial control apparatus and new markings for farm lighting plants and single-phase motors is also included. The revision was approved and published during 1936.—*National Electrical Manufacturers Association.*

Insulated Wires and Cables (C8)—The sectional committee last year reported that six of the 11 approved standards were being revised and that eight new standards were in course of development. During the past year five of the six revisions under consideration have been completed and approved by the American Standards Association. Two of the eight new standards under development have been completed and approved, and one has been completed and is before the sponsor for action.

The following is the status of each of the standards in the committee's program:

Approved Standards

Definitions and General Standards for Wires and Cables. American Standard C8a-1932 (C8.1). A new issue is now being prepared.

Specifications for Tinned Soft or Annealed Copper Wire. American Standard C8b1-1928 (C8.2).

Specifications for Soft or Annealed Copper Wire. American Standard C8b2-1928 (C8.3).

Specifications for Class A 30 per cent Rubber Insulation for Wire and Cable for General Purposes. American Tentative Standard C8.4-1936. Revision of C8d1-1928.

Specifications for Cotton Covered Round Copper Magnet Wire. American Standard C8.5-1936. Revision of C8j1-1928.

Specifications for Silk-Covered Round Copper Magnet Wire. American Standard C8.6-1936. Revision of C8j2-1928.

Specifications for Enameled Round Copper Magnet Wire. American Standard C8.7-1936. Revision of C8j3-1928.

Specifications for Weatherproof Wires and Cables. American Tentative Standard C8k1-1932 (C8.8). Former designation C8k1-1932.

Specifications for Heat-Resisting Wires and Cables. American Tentative Standard C8k2-1932 (C8.9).

Specifications for Impregnated Paper Insulation for Lead-Covered Power Cables. American Standard C8.10-1933. Being revised.

Specifications for Code Rubber Insulation for Wire and Cable for General Purposes. American Tentative Standard C8.11-1936. Revision of C8.11-1933.

Specifications for Cotton Braid for Insulated Wires and Cables. American Standard C8.12-1935.

Specifications for Tree Wire Coverings. American Tentative Standard C8.16-1936.

Specifications for Class AO 30 Per Cent Rubber Insulation for Wire and Cable for General Purposes. American Tentative Standard C8.17-1936.

Standards Prepared

Specifications for Varnished Cloth Insulation for Lead-Covered or Braided Power Cables. Nearly ready. Proposed specifications have been submitted by the technical committee but after review by the sectional committee were referred back for reconsideration of certain minor points.

Specifications for Bare Stranded Copper Cable. Nearly ready. Proposed specifications have been submitted by the technical committee but after review by the sectional committee were referred back for consideration of comments thereon.

Specifications for Metallic Coverings. Nearly ready. Proposed specifications have been submitted by the technical committee (ninth draft) but were referred back for reconsideration of certain objections in the sectional committee.

Specifications for Weather-Resistant (Weatherproof) Wire and Cable URC Type. Now before sponsor.

It has been proposed that all the approved standards now be printed by the American Standards Association in the standard ASA form. The ASA staff, in cooperation with the officers of the sectional committee, is proceeding with plans for printing at an early date.

The approved standards have been available in printed form through the courtesy of the American Institute of Electrical Engineers or in mimeograph form. The stock of copies of many of them is now exhausted, however, and the comparatively large number of standards now available makes the printing of all seem desirable.

All the standards will be available individually as usual, but it is also planned to have them available in complete sets in a suitable loose-leaf type of binder. Each standard will contain a statement of the history of the development of the standards, their intended purpose, and how they may be most effectively applied where it is

Wire and Cable Standards Have Special Binder

Fourteen standards for various types of wires and cables will soon be available in printed pamphlets, and in a special binder. These standards represent a large part of the work before the Sectional Committee on Insulated Wires and Cables (C8).

Four other standards, now being considered by the committee, may also be made available during this year.

In common with the methods used by other ASA committees, this wire and cables committee is studying other subjects in its field to determine whether additional standards may be prepared.

desired to use them for purchase specification purposes.

It is expected that the printed standards, the complete set to include 18 standards, will be available early in 1937.

Other work is in progress in subcommittees of the sectional committees:

Technical Committee 4 on Rubber Insulation has in hand the development of specifications for rubber insulation for wires and cables to be operated above 5000 volts.

Technical Committee 7 on Magnet Wire is engaged on (a) specifications for heavy enameled round magnet wire and (b) standard apparatus and procedure for testing the springiness of magnet wire—an important property for which a standard is needed.

Technical Committee 8 on Fibrous Coverings is working on (a) specifications for saturants and finishes for aerial rubber insulated wires and cables, (b) specifications for saturants and finishes for wire and cable used in ducts in interior and underground installations, (c) specifications for saturants and finishes for wire and cable in exposed interior and underground installations, (d) specifications for rubber-filled cable tape, and (e) specifications for jute fillers and servings for cable.

Technical Committee 13 on Heat Resistant Wires is working on (a) revision of the existing approved specifications for Heat Resisting Wires and Cables (C8.9-1932) and (b) the development of specifications for wire and cable in applications where asbestos is the principal component of the covering.—F. M. Farmer, Chairman; F. W. Davidson, Secretary.

Hard-Drawn Aluminum Conductors (C11)

—Because of his position as chairman of committee C11, M. E. Noyes is Technical Advisor and Chairman of the Advisors on Aluminum to the U. S. National Committee of the International Electrotechnical Commission. Mr. Noyes, with the cooperation of the other advisors, prepared and sent a report giving the American viewpoint to the Committee of Advisors on Aluminum of the International Electrotechnical Commission

when they met in Berlin on October 29 and 30.—*American Institute of Electrical Engineers.*

Radio (C16)—Proposals for standards on Broadcast Radio Receivers, Adjustable Resistance Units, Color Code for Resistors, and Panel Lamps have been balloted on by the members of the Sectional Committee on Radio and are nearly ready for submission to the sponsor and subsequent action by the American Standards Association.

Additional extensive proposals on vacuum-tube bases, although given approval by a majority of the members on the sectional committee, were objected to as conflicting in minor points with standards subsequently adopted by the manufacturing group. This material is now being revised in an attempt to bring about unanimous agreement. The sectional committee will give it further consideration later, or at the time the other material is acted on if agreement can be reached in time.—*Institute of Radio Engineers.*

Miscellaneous Pole Line Materials (C17)—No request has been received for actively starting this project, although various large users have been working on specifications of their own in this field. The sponsor is ready to act whenever there is a demand for the work to get under way.—*Electric Light and Power Group.*

Dry Cells and Batteries (C18)—Revised specifications for dry cells and batteries have been completed during the past year and approved by the American Standards Association.—*U. S. Department of Commerce, National Bureau of Standards.*

Industrial Control Apparatus (C19)—It is expected that consideration will soon be given to a revision of the existing American Standard for Industrial Control Apparatus (C19-1925) in order to bring it up-to-date.—*American Institute of Electrical Engineers; National Electrical Manufacturers Association.*

Electric Motor Frame Dimensions (C28)—There have been no developments in connection with this project since the report published in the January, 1932, issue of INDUSTRIAL STANDARDIZATION.

Insulators for Electric Power Lines (C29)—This sectional committee has held no meetings during 1936 because nothing which would justify calling a meeting has been referred to the committee since the last meeting on February 27, 1935. It has been expected that some of the four groups working under this committee would have some recommendations for revision of A.I.E.E. Specification 41, on insulator tests, but so far no suggestions or recommendations have been submitted. These four groups have been investigating their respective assignments and some suggestions or recommendations will probably be

forthcoming during 1937.—*A. B. Campbell, Secretary.*

Electrical Devices and Materials with Relation to Fire and Casualty Hazards (C33)—Minutes of recent meetings of the Executive Committee of the Electrical Standards Committee, and of the ESC itself fully record the current status of this project. The sponsor understands that in view of a question involving restriction of the scope to devices and materials employed in fixed wiring in premises, as brought up at one of these meetings, the formal statement of the scope, as published in the ASA Year Book, is correctly interpreted as co-extensive with the index to the List of Inspected Electrical Appliances of the Underwriters' Laboratories, Inc.—*Underwriters' Laboratories.*

Mercury Arc Rectifiers (C34)—In June, 1934, the American Institute of Electrical Engineers as sponsor for this project, published a report on Standards for Metal Tank Mercury Arc Rectifiers to gather comment and criticism. There has been no further activity in connection with the report.—*American Institute of Electrical Engineers.*

Rotating Electrical Equipment for Railway Cars and Locomotives (C35)—A standard was completed during the past year, and was approved by the American Standards Association. It was described in an article on page 31, INDUSTRIAL STANDARDIZATION, February, 1937.

Power Switchgear (C37)—The sectional committee is now taking final action on proposed relay and automatic station standards. The vote of the committee has not yet been completed.

Seven standards are now being considered by the sectional committee, five prepared by subcommittees, and three submitted as completed proposals by other organizations. They are:

- Oil circuit breakers
- Metal-clad switchgear
- Disconnecting switches and horn-gap switches
- High voltage fuses and associated current limiting resistors (above 750 volts)
- Large air-circuit breakers
- AC circuit breakers rated 1000 volts and above (proposal of the International Electrotechnical Commission)
- Relays associated with power switchgear (American Institute of Electrical Engineers proposal)
- Automatic stations (American Institute of Electrical Engineers proposal)

In addition, a proposed standard of the International Electrotechnical Commission for a-c circuit breakers was considered by the committee and received endorsement for use only as a standard in international transactions on such breakers.

This sectional committee has made cooperative arrangements with the Sectional Committee on Insulators for Electric Power Lines (C29).

Electrical Measuring Instruments (C39)—

A draft on Electrical Measuring Instruments is practically in form for a letter ballot of the sectional committee. A proposed standard was circulated and voted upon early in 1936, but the comments received indicated that a further review of certain parts dealing particularly with instrument performance would have to be made. This has now been done and the consensus of the views incorporated in a revision. It is expected that this revision will be sent out for letter ballot soon.—*E. J. Rutan, Chairman.*

Definitions of Electrical Terms (C42)—

This project, which involves the preparation of comprehensive definitions of electrical terms, is reaching its final stages. The secretary of the committee is now engaged in final editing of a report which includes definitions of over 6,000 electrical terms. Final letter ballot to the members of the sectional committee may be sent out soon, and it is expected that the report may be approved as American Standard and printed copies available before the end of 1937.—*American Institute of Electrical Engineers.*

Rolled Threads for Screw Shells of Electric Sockets and Lamp Bases (C44)—

Work has been going forward on the development of a new standard to provide a means for gaging lamp bases and sockets when completely assembled. A Working Committee, consisting of three members of one of the subcommittees of C44, has been gaging screw shells on lamp bases for the last two or three years and has accumulated a great deal of information.

The Working Committee recently reached a conclusion and expects soon to make a report to the subcommittee recommending a supplementary standard for the assembled product. If the subcommittee approves the recommendation, it will then be submitted to the sectional committee for approval and subsequent presentation to the American Standards Association.

Rotating Electrical Machinery (C50)—

The American Standards for Rotating Electrical Equipment, prepared by this committee, were published in January, 1936. Since that time the principal work actively before the committee has been to formulate proposals for submission to the International Electrotechnical Commission.

One meeting was held during 1936 at which recommendations were agreed upon which were subsequently submitted to the IEC.

A question of interpretation of the American Standard C50 regarding insulation is now before the committee.

It is expected that the next major work to come before the committee will be the review of the various test codes pertaining to rotating machines.—*L. F. Adams, Chairman; E. B. Paxton, Secretary.*

International Cooperation Marks Work on Transformer Standards

Recent new technical developments have been recognized in five transformer standards now being completed by the sectional committee.

A test code for transformers and a guide for the operation of transformers are included in these standards.

Cooperation with international work on transformer standards is one of the features of this committee's work.

Electric Welding Apparatus (C52)—

The two projects assigned to this sectional committee were completed in 1933 as Standards for Electric Arc Welding Apparatus and Standards for Resistance Welding Apparatus. These standards were approved by the American Standards Association as American Standards in September, 1933.

The committee has been inactive since 1933. No suggestion has been received that a revision be undertaken, nor has any other project been submitted.

The committee was recently asked to recommend an answer for the United States National Committee of the International Electrotechnical Commission to make to the central office of the IEC on whether the IEC should undertake the development of international rules for electric welding apparatus and equipment. This proposal has been suggested by the Netherlands National Committee. Committee C52 has recommended that the USNC approve the proposal and, if the Committee of Action establishes a committee on this project, that the USNC offer to cooperate in the work.

Capacitors (C55)—The American Institute of Electrical Engineers has asked its Committee on Electrical Machinery to review the standard for Capacitors to determine whether revisions are necessary. This standard was approved in 1934. — *American Institute of Electrical Engineers.*

Transformers (C57)—Five standards which have been under active preparation in various subcommittees for two years or more are now being sent to letter ballot of the sectional committee. These apply to: Distribution and Power Transformers; Instrument Transformers; Constant-Current Transformers; Voltage Regulators; and Current-Limiting Reactors. These standards will recognize many recent advances not heretofore covered by any standards.

Appendices to the standards will include a Test Code for Transformers and a Guide for the Operation of Transformers, each of which by itself is a considerable undertaking.

This sectional committee has also formulated and submitted to the U. S. National Committee of the International Electrotechnical Commission recommendations to the I.E.C. on Transformer Standards.—*V. M. Montsinger, Chairman.*

Electrical Insulating Materials in General (C59)—The committee held one meeting during the year in New York City on March 20, 1936. It has continued to keep in touch with the work of the U. S. National Committee of the International Electrotechnical Commission on the projects relating to insulating oils, and shellac, and synthetic resins.

A special committee appointed in 1935 to harmonize the differences in the several existing specifications (those of the American Society for Testing Materials, the Federal Specifications Board, and the Association of American Railroads) for rubber insulating tape is making progress.

A revision of the A.S.T.M. Standard Methods of Testing Electrical Insulating Oils (A.S.T.M. D 117; ASA C59.2), covering a new method of specific gravity determination, which was adopted by the American Society for Testing Materials in September, 1936, was approved by letter ballot of the sectional committee for submission to the American Standards Association for approval as American Standard. This revision was submitted to the ASA for approval September 10, 1936, and has been approved.

The Standard Methods of Testing Electrical Porcelain (A.S.T.M. D 116) were submitted to the ASA in 1935 for approval as American Tentative Standard. The standards have not as yet been approved, and at the March, 1936, meeting of the sectional committee a special committee was appointed to review the situation on this standard.

The following were elected officers of the sectional committee for the ensuing term of two years: H. L. Curtis, Chairman; E. D. Youmans, Vice-Chairman; R. E. Hess, Secretary.—*American Society for Testing Materials.*

Vacuum Tubes for Industrial Purposes (C60)—At meetings of the committee in 1935, it was agreed that a study should be made of the standardization work of other societies which appeared to come within the scope of the activities of the C60 Committee. Accordingly, a subcommittee was appointed to study standardization completed or in progress by other associations relating, directly or indirectly, to definitions, classifications, methods of rating and testing, dimensions and interchangeability of tubes for power and industrial applications. A compre-

hensive report of this subcommittee was submitted and considered at meetings held in New York October 28 and 29. At this meeting the action consisted in consideration of something over 100 definitions, approximately 50 vacuum tube letter symbols, and a suitable set of vacuum tube graphical symbols. Inasmuch as these phases had been considered, in part at least, by Electronics 13A Subcommittee of Sectional Committee C42, it was agreed that our committee should make recommendations as to modifications, deletions, and additions to the report of the Electronics 13A Committee. These recommendations take into consideration the recent work of such associations as the Institute of Radio Engineers, the National Electrical Manufacturers Association, and the American Institute of Electrical Engineers.

The next step involves a joint meeting of the Subcommittee on Electronics 13A and Sectional Committee C60 in order that a coordinated and unified set of recommended definitions covering the vacuum tube field may be presented to the Electrical Standards Committee for their consideration. It is planned to hold such a joint meeting in the near future, if possible, in time that the revised and coordinated report may be sent out for letter ballot with other recommendations which are now being prepared for this purpose.

The study of proper graphical and letter symbols relating to industrial vacuum tubes will be cleared through the appropriate ASA committees, on Scientific and Engineering Symbols and Abbreviations (Z10) and on Graphical Symbols and Abbreviations for Use on Drawings (Z32).

The committee is considering, during the coming year, in addition to the completion of the work referred to above, a study of standardization with reference to (1) sockets, caps, and terminal leads; (2) dimensions and interchangeability; and (3) methods of rating and testing.—*Dayton C. Ulrey, Chairman.*

Electric and Magnetic Magnitudes and Units (C61)—At its plenary meeting at Scheveningen-Brussels in 1935, the International Electrotechnical Commission adopted, without opposition, the Meter Kilogram Second (MKS) system of Giorgi, subject to the addition of a fourth fundamental unit to be selected at a future meeting.

The IEC asked the International Union of Pure and Applied Physics, and the Comité Consultatif d'Electricité (C.C.d'E.) of the International Committee of Weights and Measures for opinions as to the best selection of the fourth fundamental unit in order definitely to connect the practical series of absolute units—*ohm, volt, ampere*, etc., with the *meter, kilogram, and second*.

Replies have been received from these commit-

tees as follows: The reply of the C.C.d'E. has been published (French text) in *Proces Verbaux des Seances* (Comite International des Poids et Mesures) 2nd Series, Vol. XVII, Session de 1935, pp 95-100. An English translation of this C.C.d'E. report appeared in *Electrical Engineering*, Vol. 50, No. 12, December, 1935, pp 1379-1383.

The Symbols, Units, and Nomenclature (SUN) Committee reported through its president, the late Sir Richard Glazebrook, F.R.S., on November 30, 1935. This report has been mailed to each of the National Committees of the IEC, and it is expected that it will soon be published by the Society for the Promotion of Engineering Education. A mimeographed copy is available from the ASA office to any one interested.

In view of these committee recommendations, it might be advisable for the U. S. National Committee to forward to General Secretary le Maistre of the International Electrotechnical Commission a recommended fourth unit selection.

No international meeting of the IEC on electrical and magnetic magnitudes and units (new Advisory Committee 24) has been held since the plenary meeting at Scheveningen-Brussels in June, 1935, nor has any meeting of the United States Committee on Electric and Magnetic Magnitudes and Units (C61) been held since that date.

The Society for the Promotion of Engineering Education held a regular meeting in June, 1936, and at this meeting the adoption of the MKS System by the International Electrotechnical Commission was reported and discussed in a "Conference on Electrical Engineering" (See S.P.E.E. *Journal of Engineering Education*, Vol. XXVII, No. 2, Oct., 1935, pp 115-116).

The Association of Physics Teachers has appointed a committee to consider and report upon the MKS system. Professor W. H. Michener of the Carnegie Institute of Technology is chairman of this committee.

No information has been received from abroad that any of the National Committees of the IEC desire to rescind their vote favoring the international adoption of the Giorgi system. On the other hand, personal opinions have been received from electrical engineers in various countries favoring the tentative use of the MKS system already attempted.

The only textbook employing units in the MKS system, which has appeared as yet, is *Principles of Electric and Magnetic Measurements* by P. Vigoureux and C. E. Webb of the National Physical Laboratory at Teddington. (Blackie and Son, Ltd., Glasgow. U. S. Agent, Prentice-Hall, Inc., 70 Fifth Ave., New York City. 392 pages.) This treatise relates to the intermediary fields of

basic and applied physics between precise physical measurements and electrical engineering. It does not refer to the MKS system by title, but all its formulae and equations employ the MKS system (rationalized).

There seems to be no obstacle to hinder the use of the MKS system in American electrical engineering literature. The question of the fourth basic unit is for theoretical rather than for practical consideration.—A. E. Kennelly, *Chairman*.

Lightning Arresters (C62)—New American Standards on lightning arresters, presented by the American Institute of Electrical Engineers, following the publication of two editions of a preliminary report to stimulate comment and suggestion, were approved by the ASA, and published. The final approved edition combines the work and experience of the A.I.E.E. Protective Devices Committee with the comments and suggestions received. The standards provide tests to compare types of arresters and to show what protection can be expected.—*American Institute of Electrical Engineers*.

Radio-Electrical Coordination (C63)—This committee held one meeting during the year at which plans were made for organizing the work, and a decision was taken to cooperate with the International Electrotechnical Commission and certain other bodies on international work on radio interference. The chief activity of the committee during the year consisted in the preparation of reports and comments for these international organizations. A meeting of the committee is scheduled for early in 1937.—*Radio Manufacturers Association*.

Carbon, Graphite, and Metal-Graphite Brushes (C64)—The Standards of the National Electrical Manufacturers Association on this subject were submitted to the American Standards Association and were approved as existing standards in December, 1935. There seems to be no immediate need of revising them.—*National Electrical Manufacturers Association*.

Power-Operated Radio Receiving Appliances (C65)—This project is comparatively new. A proposal to approve the existing standard prepared by the Underwriters' Laboratories was submitted to the Electrical Standards Committee and the ASA and this standard has now been approved.

Minor changes in the text of these standards may be given consideration during 1937, and submitted as amended to the American Standards Association, according to the proprietary sponsorship procedure.—*Underwriters' Laboratories*.

Wood Poles (05)—The American Tentative Standard Specifications for Wood Poles have now been in use for five years in the case of northern white cedar, western red cedar, chestnut,

and creosoted southern pine, and for three years in the case of Douglas fir and lodgepole pine. While the specifications are apparently functioning satisfactorily, experience with them has been sufficiently extensive to reveal the desirability of minor revisions.

Plans are, accordingly, being formulated to reissue all of the tentative specifications as American Standards, after such modifications as may be necessary for uniformity and requirements for current production and use. It is assumed that the renewal of the Committee's activities will mean a review and rearrangement of personnel with a view to proper representation of current interests.—*ASA Telephone Group.*

Recommends ASA Direct International Photography Project

A conference at which all branches of the photographic industry were represented has recommended that the American Standards Association accept the secretariat for international standardization in the photographic field. If the American Standards Association acts favorably on the recommendation, a committee representing the national standardizing bodies of the International Standards Association will work under the direction of the ASA to bring about international agreement on standards to be recommended. This committee will cooperate with the International Congress of Scientific and Applied Photography.

A committee which will make detailed suggestions to the ASA on the scope and organization of the work was appointed at the recent conference. Members are:

L. A. Jones, Eastman Kodak Company
Walter Clark, Eastman Kodak Company
V. S. Sease, duPont Film Manufacturing Company
A. G. Hardy, Optical Society of America
W. A. Schmidt, Agfa-Ansco Corporation
A. N. Goldsmith, Society of Motion Picture Engineers
W. H. Rayton, Bausch & Lomb Optical Company

Representatives of several countries have suggested to the International Standards Association that photographic standardization might include such subjects as gradation of copying papers and positive emulsions; dimensions, designation and packaging of roll films, film packs, plates, and papers; test of shutter speeds and tolerances; and designation of the diaphragm openings for lenses.

It was also recommended that if it is decided to go forward with this project, the Acoustical Society of America be asked to take the administrative leadership to organize a national standardization project on photography under ASA procedure.

British Issue New Standards For Ready Mixed Paints

Ready mixed paints are the subject of newly revised British Standard specifications just received by the American Standards Association Library. Specifications for eight different paints of the type known as "straight linseed oil paints" characterized by the fact that the binding medium consists solely of linseed oil are included in the pamphlet BSS No. 261-1936. They are listed as:

White ready mixed paint (white lead base)
Tinted ready mixed paints (white lead base)
White ready mixed paint (zinc oxide base)
Tinted ready mixed paints (zinc oxide base)
Green ready mixed paints
Black ready mixed paints
Red oxide of iron ready mixed paints
Purple brown oxide of iron ready mixed paints

The specifications are divided into three parts:

1. Specific clauses relating to individual paints in respect of composition and specific gravity.
2. General clauses relating to physical properties which are identical for all the paints in this series.
3. Appendices giving methods of sampling and testing.

"These specifications are not concerned with those paints known as Gloss paints, varnish paints, enamel paints or enamels, the preparation of which involves the use of bodied oils, stand oil, tung oil, resins, varnishes, and the like," says the Foreword to the Specifications.

"The paint specified herein should, when brushed out and allowed to dry on glass or other non-absorbent surface have the 'full oil gloss' typical of paints of this class. This is difficult to describe or specify except by reference to a specimen or pattern. It should, however, be clearly understood that these paints do not produce a surface typical of hard gloss or enamel paints."

Other British Standard Specifications having to do with paints include:

White pigments for paints No. 239
Linseed oil for paints No. 242
Turpentine (Types 1 and 2) and white spirit No. 244
Barytes for paints No. 260
Red oxides of iron (natural, manufactured, and blended) No. 272
Lead chromes for paints No. 282
Prussian blue for paints No. 283
Black pigments No. 284
Purple oxides of iron for paints No. 339
Schedule of colors for ready-mixed paints No. 381
Test sieves No. 410

Copies of these specifications may be ordered through the American Standards Association Library.

Why Mechanical Engineers Need ASA's Program

American Standards Association coordinates diverse standards activities, codifying engineering experience

Increase in machine efficiency and accuracy leads to greater need for standards

Human interest centers in safety codes

by

Walter Samans¹

*Chairman, Standards Committee
American Society of Mechanical Engineers*

THOSE who have been in contact with mechanical construction and shop fabrication for many years appreciate the difference between former habits of "muddling through" the sequence of designing, purchasing, assembling and operating, and maintaining equipment under old helter-skelter manufacturing methods, and the accomplishments of modern technique making use of accepted standards.

In the days when foundry and machine shop practice were secrets of the individual owner or superintendent, the product was judged by its service performance, and repeat orders resulted largely from the old-time sales contact in which the salesman's personality was expressed by pleasant conversation and cigars. Such contacts were usually maintained entirely with purchasing agents, operating superintendents, and foremen.

During the past 35 years, industrial organizations have increased their engineering personnel dealing with design, construction, and operation in the ratio of from 5 to 1 in small plants up to

100 to 1 in larger plants. With a corresponding improvement in knowledge of physical and chemical characteristics of materials there has developed a proportionately greater accuracy in production and manufacture of finished materials, as well as an increase in the rate of production per machine. At the same time there has been less demand for individual knowledge and ingenuity on the part of foundrymen and machine operators in shops, as well as for less special knowledge of manufacturers' practices on the part of the engineers and operators of the user.

More Power — More Standards

The development of dimensional standards based on a deeper appreciation of physics, chemistry, and particularly metallurgy, coupled with sound mathematical analysis, was the natural outcome of this trend. Work on such standards was not entirely an attempt to simplify design and construction but was the natural outgrowth of improvements in steam and power production and many manufacturing process operations in which there has been a continued increase in the

¹Atlantic Refining Company, Philadelphia.

size of units with corresponding increases in efficiency.

In these developments involving mechanical efficiency, the dominant principle was really the increase in thermal efficiency in which the greatest operating gains could be realized. Such progress could not be made without increasing operating pressures and temperatures step by step as experience increased our knowledge.

Units 30 Times Larger

Steam plants operating at 100 to 150 lb gage thirty to forty years ago have been superseded by much more efficient plants in units 30 times larger, operating at pressures of 600 to 800 lb. while there are a number of plants operating at 1200 lb and at temperatures up to 950 F and a few at 1400 lb gage pressure.

In the same period, electric generators driven by reciprocating engines have been replaced by steam turbine drives, stepping up from 1000 to 5000-kw to 200,000-kw, at 1800 rpm. The Diesel engine has also been a large factor towards more diversified use of power.

Process equipment that at the beginning of the century operated at pressures close to atmospheric and temperatures seldom exceeding 600 F now operates up to 1150 F and 1600 lb gage in the heat-absorbing coils, and to over 600 lb in transfer piping and connected vessels. On some isolated special processes, temperatures may go even higher than this, and pressures to 3000 lb gage or more.

At the same time, the capacities of such plants have gone up from twenty-five to seventy-five times the capacity of thirty years ago as expressed in charge per day per unit. Individual units have increased in cost in a ratio as high as 100 to 1. The greater efficiency expressed mechanically and thermally as well as in quality of

finished product has resulted in these higher priced and larger units being immeasurably better than the many small units built to take care of the requirements thirty or forty years ago.

The greatest of all benefits obtained from standardization, in addition to the use of materials best suited to the service required for operating pressures and temperatures and resistance to chemical corrosion, has been the scientific development of standards resulting in greater safety to workers as well as in uniformity of products affecting interchangeability.

The human side of these projects is really the most vital of all, in that the elimination, to as large a degree as possible, of the hazards of injury or death to the individual, through improvement of working conditions, contribute more to a peaceful home life and normal development than can economic improvement alone.

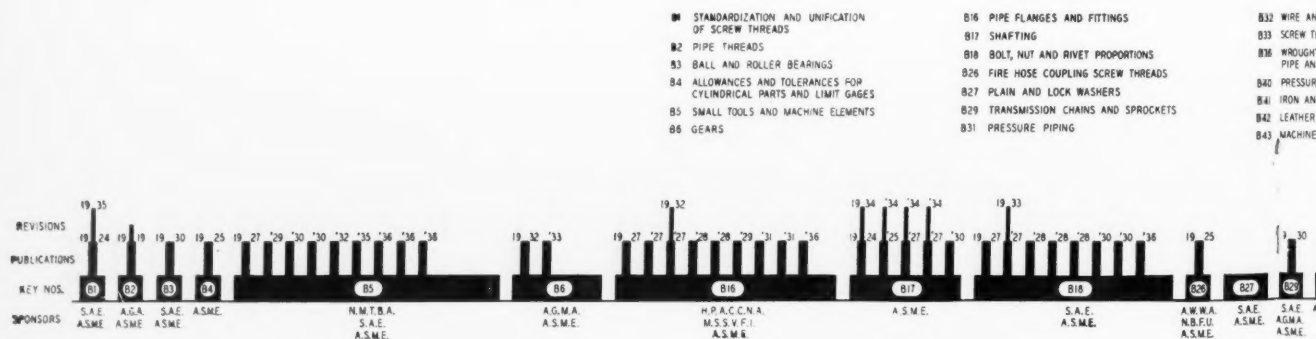
In the earlier years referred to, the development of proper dimensions in such details as machine parts, pipe fittings and valves, thicknesses of tubes and pipe, whether such materials were cast and forged or rolled, and the best economic assembly of such parts, was largely determined by individual experience and practice. This usually resulted in rules of thumb, having no basis in scientific facts or tests.

Nonconformity to any standard resulted in assemblies of parts with poor fit, the fitting together often accomplished by physical strength rather than careful application by the workmen, so that there was a positive hazard to the operator of the completed equipment as well as to the assembly workman.

The American Standards Association was formed in October, 1918, as the result of an urgent need for coordination of the efforts of engineering societies, associations of manufacturers, and individual users, towards simplifying dimensions of parts of machinery and other equipment needed in great numbers.

RESULTS ACCOMPLISHED

BY SECTIONAL COMMITTEES ORGANIZED UNDER THE PROCEDURE OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS



The manufacturers had as their first objective the education of the user to the advantage of standardization through elimination of odd sizes and unusual specifications. He had to show what such non-uniform practice did to raise costs, reduce speed of production, and slow up deliveries. The result desired would naturally have an economic value to the manufacturers because of more efficient production.

The users, represented largely by their engineers and by the purchasing agent organizations, wanted the best materials, first class workmanship, prompt deliveries, and a sure guarantee of interchangeability between similar part products made by different manufacturers. At the same time, with such a guarantee, they expected sound and proper engineering design, intelligent application of the principles of physics, chemistry, and metallurgy and that the serviceability of the product would be in reasonable conformity to the severe requirements of reliable and continuous operation of expensive equipment.

Companies Cooperate

These various interests gladly accepted their share of responsibility by appointing their engineers to the American Standards Association committees. In some cases such committees replaced others previously engaged in similar activities. In many cases also, the facilities of the respective organizations, as well as the services of assistants, have been made available to properly study, analyze, and provide satisfactory test data and experience records for the use of these committees.

Because of the great need for this information by public utilities in the power and transportation groups, by varied chemical process industries, and by the U. S. Navy, as well as manufacturers, the personnel of these committees includes representatives of all these interests.

In this connection, however, it should not be overlooked that most valuable and helpful assistance has been given and will continue to be given by recognized authorities directing or prominently connected with research institutes and university scientific laboratories. This help is contributed sometimes by the individual, but more often through the activities of the American Society for Testing Materials.

The results accomplished to date can best be visualized by an inspection of the accompanying chart that was prepared for the 1936 Annual Meeting of the American Society of Mechanical Engineers, and on which are indicated the various sectional committees organized under the procedure of the American Standards Association for which the American Society of Mechanical Engineers has the administrative leadership, either alone or jointly with other organizations.

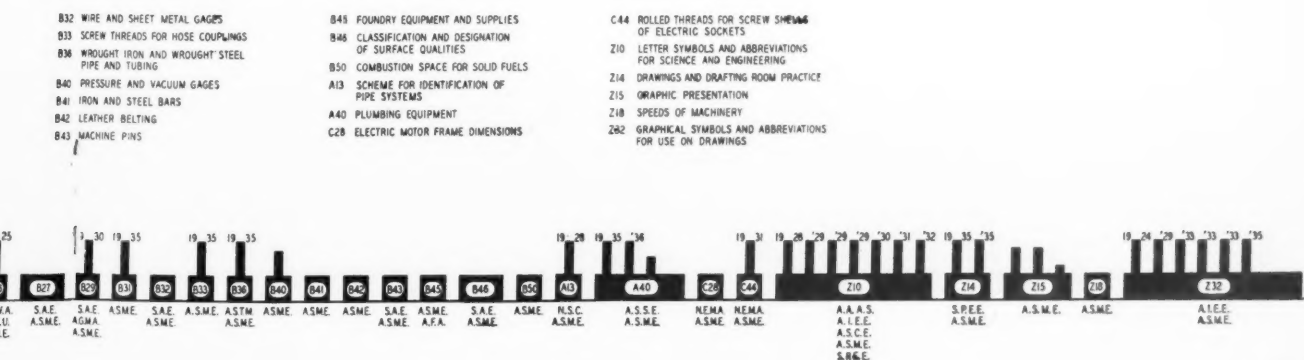
On the 216 committees and subcommittees so engaged, there are 1,285 members, but due to the fact that many of the members are serving on several committees, there are 2,809 memberships. Including the subcommittees and sub-groups, the total number of committees engaged on this work is 259 and the number of cooperating organizations represented by all the membership is 288. The three most important general groups of continuing committees are: B5 concerned with Small Tools and Machine Tool Elements, B16 concerned with Piping, Pipe Flanges and Fittings, etc., and B18 concerned with Bolt, Nut, and Rivet Proportions.

These three groups are concerned principally with the designed proportions, the heat treatment, and dimensions of the finished materials that enter into the majority of equipment items for the large interests above mentioned.

Thirteen standards in the Small Tools and Machine Tool Elements group have been completed, of which nine have been published. Twenty sub-

S ACCOMPLISHED TO DATE

THE PROCEDURE OF THE AMERICAN STANDARDS ASSOCIATION FOR WHICH
MECHANICAL ENGINEERS IS SPONSOR OR JOINT SPONSOR



committees and subgroups made up of 24 members, representing four cooperating organizations, are engaged in this work. During the past year, this group completed and the American Standards Association approved: (a) Circular and Dovetail Forming Tool Blanks, (b) Chucks and Chuck Jaws, (c) Lathe Spindle Noses. It also has completed ready for approval, (d) Machine Tapers, (e) Twist Drills, (f) Taps (as a revision), (g) Adjustable Adapters for Multiple Spindle Drilling Heads, and (h) Terminology for Single-Point Tools.

Ten Piping Standards

On B16, ten standards on piping have been completed, of which nine have been published, and on this work 16 subcommittees and subgroups, 270 members, representing 34 cooperating organizations, are engaged. During the past year, this group completed, and the ASA approved: (a) Standard on Pipe Plugs (B16e2). It also completed ready for approval, (b) Steel Welding Neck Flanges.

On B18, Bolt, Nut and Rivet Proportions, nine standards have been completed, of which eight have been published. In this group, 16 subcommittees and subgroups, comprising 159 members, representing 22 cooperating organizations, are working. During the past year, this group completed, and the ASA approved: (a) Socket Set Screws and Socket Head Cap Screws. It also completed ready for approval, (b) Large Rivets, (c) Wrench-Head Bolts and Nuts and Wrench Openings, and (d) Round Unslotted Head Bolts. The last two are revisions of previous standards.

Committee B2, on Pipe Threads, consisting of eight subcommittees and subgroups, with 98 members, representing 24 cooperating organizations, is continuing with a single extensive standard on this subject. This work was actually begun in 1913, five years before the organization of the ASA, but is being continued as an active project under ASA auspices.

One of the most generally useful standards for ensuring a trend toward good and safe design by engineers is the Code for Pressure Piping. The work on this was organized in 1926, and the standard was published as tentative in 1935. This standard was handled by Group B31, comprising 15 subcommittees and subgroups with a total membership of 196, representing 44 cooperating organizations. This is a handbook of 150 pages, with six sections: (1) Power Piping Systems, (2) Gas and Air Piping Systems, (3) Oil Piping Systems, (4) District Heating Piping Systems, (5) Fabrication Details, and (6) Materials—Specifications and Identification.

This Code-book also refers to the various other

American Standards and specifications applicable to pressure piping problems. Its recommendations include the best known practices and the result of many years of research and investigation by laboratories and manufacturers concerned with physical characteristics of and temperature effects on metals.

There are certain low points on the chart, namely for groups B27, 32, 41, 42, 43, 45, 46, 50, C28 and Z18. Any standards in these fields may involve many changes in details, and many manufacturers would have to accommodate their machinery to such changes. The work on these standards has also lagged as a result of the economic depression. The sponsors for these committees, of which the American Society of Mechanical Engineers is one, are now stimulating renewed action.

Summarizing the work of these various groups of committees and subcommittees, and excepting the B2 group on Pipe Threads, the first standard was published in 1924, and in the twelve years from 1924 to 1936 inclusive, 61 standards were developed, approved, and published, which is at the average rate of five per year. Seventy-one in all have been completed.

As stated at the beginning of this article, there is more in the picture of standardization than the dry and unemotional agreement on dimensions. The appeal to the men who have devoted their time whole-heartedly to standardization work has not been solely due to their assignment to the work or their desire to profit individually through satisfaction in accomplishment or merited approval of their superiors.

Prevent Accidents

More often their direct contact through long experience with former conditions has resulted in actual harrowing experiences with the results of the older, less efficient, and sometimes dangerous application of the materials available. It is this that may have given them the enthusiasm necessary to carry on this work in spite of all obstacles. These experiences may be the reason why they have continued for years in a work which so often imposed additional duties and drew on their time beyond normal requirements.

One has only to witness, by actual contact, the grief and agony among workmen and their families caused by accidents which might have been prevented through application of knowledge now available, to understand the primary motive of many of those who have whole-heartedly supported the work of standardization, both by their individual effort and by securing the necessary financial help from sources best able to supply it.

The various projects of the American Standards

Association should be considered in relation to their benefit to the race at large, as well as from the viewpoint of their economic benefit to the manufacturer and user. We must not let this work drop into the background because for the present we are apparently faced with an era of

returning activity, or because in some directions we appear to have reached limits of production requirements. Similar conditions apparently existed at various periods in the past, but developments in science and engineering have repeatedly branched out in new directions.

World's Gaging Practice Uniform

33 Countries Use 68F As Reference Temperature

WORLD-WIDE uniformity of the reference temperature for limit gages, and international adoption of the inch-millimeter ratio 25.4 for industrial use, have now completely harmonized industrial length measurements throughout the world.

One of the basic features of a system of limit gaging is the reference temperature at which the gages, and the work which they are to check, are required to have acceptable dimensions. Now 33 countries have adopted the internationally recommended temperature of 68 degrees Fahrenheit, making gaging practice uniform in all countries of any industrial importance.

The 33 countries are:

Argentina	Japan
Australia	Mexico
Austria	Netherlands
Belgium	Norway
Bulgaria	Peru
Canada	Poland
Chile	Portugal
Czechoslovakia	Roumania
Denmark	Sweden
Finland	Switzerland
France	Siam
Germany	Spain
Great Britain	Turkey
Hungary	United States of America
Ireland	Uruguay
Italy	U.S.S.R
Yugoslavia	

In 1925 the reference temperature 68 degrees Fahrenheit, or 20 degrees Centigrade, was standardized in the American Tentative Standard for Tolerances, Allowances, and Gages for Metal Fits (B4a-1925).

Soon after a technical committee of the International Standards Association had started its

work on an international system of fits (in 1926) it also recommended adoption of this reference temperature.

In 1927 the matter was considered by the International Committee on Weights and Measures, which appointed a committee of five members to study the problem. Four of these represented the National Bureau of Standards (United States), the National Physical Laboratory (Great Britain), the Physikalisch-Technische Reichsanstalt (Germany), and the Laboratoire d'Essais du Conservatoire National des Arts et Metiers (France). The fifth member was the Director of the International Bureau of Weights and Measures.

France, which had the reference temperature of zero degrees Centigrade or 32 degrees Fahrenheit, and Great Britain, which had adopted 62 degrees Fahrenheit, agreed to change over to 68 degrees Fahrenheit for the sake of international uniformity in limit gaging.

As these decisions made 68 degrees Fahrenheit practically a world standard, the International Committee on Weights and Measures decided to recommend this figure for industrial measurements.

J. Edgar Pew Receives Medal For Standards Achievements

J. Edgar Pew, vice-president of the Sun Oil Company, and member of the Board of Directors of the American Standards Association, was awarded the Anthony F. Lucas Medal by the American Institute of Mining and Metallurgical Engineers "for distinguished achievement in improving the technique and practice of finding or producing petroleum." The award calls attention to Mr. Pew's vigorous promotion of the program of standardization of oil field equipment. It was presented at the annual meeting of the Institute February 17.

Three New Members Elected To ASA Board of Directors

THREE new members were elected by the Board of Directors of the American Standards Association at its meeting March 3, and two members were re-elected to take office immediately and to serve for a term of three years.

Philip E. Bliss, president, Warner & Swasey Company, Cleveland, Ohio, member of the Board of Governors of the National Industrial Conference Board, was nominated by the American Society of Mechanical Engineers.

D. J. Kerr, assistant to the president and a Director of the Lehigh Valley Railroad, succeeds L. A. Downs as nominee of the Association of American Railroads.

Leonard Peckitt, president, Warren Foundry and Pipe Company, and member of the Board of Directors of the Equitable Life Insurance Company, was nominated by the Cast-Iron Pipe Research Association.

J. Edgar Pew, vice-president of the Sun Oil Company, Philadelphia, and H. P. Charlesworth, assistant chief engineer, American Telephone & Telegraph Company, were re-elected. Mr. Pew was nominated by the American Petroleum Institute, and Mr. Charlesworth by the American Institute of Electrical Engineers. Mr. Charlesworth has been closely associated with the American Standards Association for some time as vice-chairman of the Electrical Standards Com-

mittee and as a member of the United States National Committee of the International Electrotechnical Commission.

Other members of the ASA Board of Directors are:

Dana D. Barnum, president, Boston Consolidated Gas Company, *ASA President*
 George H. Benzon, Jr., vice-president, Wm. Sellers & Company, Philadelphia; *National Machine Tool Builders Association*
 Lyman J. Briggs, director, National Bureau of Standards; *U. S. Department of Commerce*
 Howard Coonley, president, Walworth Company; *ASA Past-President*
 Wallace Falvey, vice-president, Massachusetts Bonding & Insurance Company; *National Bureau of Casualty & Surety Underwriters*
 F. M. Farmer, vice-president, Electrical Testing Laboratories; *Chairman, ASA Standards Council*
 J. C. Irwin, valuation engineer, Boston & Albany Railroad; *Past-Chairman, ASA Standards Council*
 S. L. Nicholson, assistant to vice-president, Westinghouse Electric & Manufacturing Company; *National Electrical Manufacturers Association*
 John C. Parker, vice-president, Consolidated Edison Co. of New York; *Electric Light and Power Group*
 C. E. Pettibone, vice-president, American Mutual Liability Insurance Company; *National Association of Mutual Casualty Companies*
 Edmund A. Prentis, Spencer, White & Prentis, Inc.; *vice-president, American Standards Association*
 W. T. Russell, vice-president, Brooklyn & Queens Rapid Transit Company, *American Transit Association*
 A. R. Small, president, Underwriters' Laboratories; *Fire Protection Group*

ASA Approves Standard for Uncoated Wrought Iron Sheets

The American Standards Association has just given national standing as an American Standard to the Specifications for Uncoated Wrought-Iron Sheets (ASA G23-1937; A.S.T.M. A162-36) through its approval of these A.S.T.M. specifications. The Society has been given full authority as proprietary sponsor to make and recommend future revisions of the standard.

The specifications, prepared originally in 1935 by the American Society for Testing Materials' Committee A-2 on Wrought-Iron, were designed to fill the growing demands for requirements covering wrought-iron sheets used for roughing or siding purposes and for moderate shaping, including corrugating.

To accompany the specifications for uncoated wrought-iron sheets, the A.S.T.M. committee also developed tentative specifications for zinc-coated

(galvanized) wrought-iron sheets (A.S.T.M. A163-35), which are now before the American Standards Association for approval. These two specifications together cover the services for which wrought-iron in sheet form is customarily used.

Special List of Safety Codes

The Library of the American Standards Association has recently prepared a special index to American Standard Safety Codes. The index is by subject and by number with special annotations showing how to consult copies of codes that are out of print. This index will be sent without charge to any members particularly interested in the safety code work of the ASA. Requests should be addressed to the Library of the American Standards Association.

Management Society Elects Gaillard Vice-President On Standards

John Gaillard, industrial engineer and mechanical engineer on the ASA staff, has been elected vice-president in charge of standardization by the Board of Directors of the Society for the Advancement of Management.

The Board has empowered Dr. Gaillard to appoint a committee to launch an active campaign in promoting the knowledge and application of standardization as a major function of industrial management. Plans for such a campaign will be started at once.

The S.A.M., of which Dr. Gaillard is a charter member, has resulted from a merger of the Taylor Society and the Society of Industrial Engineers. With its membership of over nine hundred, comprising business executives, industrial engineers, plant managers, purchasing agents, merchandisers, standardization engineers, educators, research workers, students, etc., it offers a splendid forum for the discussion of all problems arising in business management.

President for 1937 is Wm. H. Gesell, Vice President, Lehn and Fink Products Corporation, Bloomfield, N. J., who succeeded Ordway Tead, editor of economic books, Harper Brothers, and Lecturer on Personnel, Columbia University. The Board of Directors consists of the president of the Society and the following officers: Charles G. Smith, vice-president; David B. Porter, secretary; Otto F. Taylor, treasurer; George W. Barnwell; J. A. Carlin; H. P. Dutton; K. MacGrath and H. S. Person.

Standardization will be a new addition to the special divisions of the S.A.M., each of which is in charge of a vice-president.

George S. Rice Receives Mining Institute's Award

The American Institute of Mining and Metallurgical Engineers awarded its Certificate of Honorary Membership to George S. Rice, chief mining engineer at the Bureau of Mines in Washington, at its annual meeting in February.

Mr. Rice has been actively connected with the work of the American Standards Association for some time. He is an alternate member of the ASA Standards Council and of the Mining Standardization Correlating Committee, which heads the mining standards program of the ASA.

The Certificate was presented "in recognition of his distinguished services in promoting safety

Sympathy from Great Britain

This letter from the Director of the British Standards Institution, national standardizing body in Great Britain, was received early in February when the flood dangers were at their height:

*British Standards Institution
28, Victoria Street,
London, S.W.1, England,
5th February, 1937.*

Dr. P. G. Agnew,
American Standards Association,
29 West Thirty-Ninth Street,
New York, U. S. A.

My dear Dr. Agnew:

I am desired on behalf of my organization to offer to the American Standards Association our most deep and sincere sympathy in the disastrous floods which are causing so much destruction and suffering in your country.

We are glad to see that both our King and Government have sent messages of sympathy to President Roosevelt and the American Government but we would like to add our very special sympathies and to ask you to convey this to your Association at a suitable opportunity.

I am,

Yours sincerely,

C. le Maistre
Director

A.I.E.E. Asks Comments On Machine Test Code

A completely revised edition of the Test Code for Synchronous Machines, originally issued by the American Institute of Electrical Engineers in 1933, is now being circulated by the A.I.E.E. for suggestions and criticisms.

The revision is a preliminary report prepared under the auspices of the A.I.E.E. Committee on Electrical Machinery and has not yet been adopted as a standard. It is being circulated without charge. Any suggestions should be sent to H. E. Farrer, Secretary, A.I.E.E. Standards Committee, 33 West 39th Street, New York.

Committee Evaluates Factors Important in Selecting Coal

The relative importance of the factors for selecting coal has been evaluated in a series of charts to guide the consumer in buying coal for his particular needs, and the producer in reaching markets for which his product is best suited. These charts have just been published. The evaluation of these factors was completed by a subcommittee of the Sectional Committee on Classification of Coals working under the procedure of the American Standards Association.

The committee has prepared a series of charts showing the evaluation of the selection factors under seven different use classifications: stationary steam generation, hand fired; stationary steam generation, stoker fired; stationary steam generation, pulverized coal; coke and gas making; ceramic products; miscellaneous; domestic, bunker, and cargo.

Under these classifications, selection factors, such as moisture, ash, fusing point of ash, classification by rank or by grade, are rated for different types of coal used under varying conditions, three stars signifying that the factor under a particular use condition for a particular type of coal is very essential, two stars that it is of more than ordinary importance, one star that it is of ordinary importance, a dash that it is not important, and a blank space that it requires further development.

The rating of the factors is determined entirely on the technical factors involved, without regard to the economic factors such as the kinds and

prices of coals available in various territories, freight rates, etc.

In making the classification, the committee first prepared a tabulation of the various chemical and physical factors which affect the selection of coal for various uses, with a reference to where a standard or published method can be found for determining each factor in the laboratory.

It next prepared a second tabulation showing the various industrial and domestic uses of coal, subdivided according to distinct types of equipment and conditions of use which affect coal selection.

Then it combined these two tabulations into a series of blank charts which formed a questionnaire. This questionnaire was sent to a selected group of fuel technologists with the request that they indicate the relative importance of each coal selection factor for all of the uses of coal for which they had special technical knowledge.

When these questionnaires were returned, the committee compiled and averaged the results and prepared the charts showing what technical factors should be given consideration when selecting coal for specific uses and conditions.

The new publication, *Factors Recommended for Consideration in the Selection of Coal*, was prepared under the administrative supervision of the American Society for Testing Materials with the cooperation of the National Association of Purchasing Agents and was published by the N.A.P.A. Copies are available at \$1.00 each from the American Standards Association.

District of Columbia Names ASA as Approval Agency

Users of gas-burning appliances in the District of Columbia will be protected from now on through new regulations requiring that appliances installed in the District must meet the safety and performance requirements of a nationally recognized organization. A "nationally recognized organization" must have functions equivalent to the American Standards Association, or the American Gas Association, the requirements specify.

"The manufacturer or dealer proposing to sell or install such appliance in the District of Columbia shall furnish to the Inspector of Plumbing an authenticated copy of such approval and list-

ing," the regulations require. "In the event that no such requirements have been established by these organizations, such appliances must be approved by the Gas Code Committee of the District of Columbia."

Standard Specifications For Carbide Refractories

Standard specifications for silicon carbide refractories have been adopted by the Special Refractories Association. The specifications cover Grade A, Grade B, and semi-silicon carbide refractories. Copies may be obtained from the Special Refractories Association, 90 West Street, New York.

Railroads Stress Standards In National Advertising

STANDARDIZATION has made the advertising columns of the large-circulation magazines. As a selling point, it is more scientific, although designed to be as potent as the well-known "pick-me-up" ads of certain brands of cigarettes or the "beautiful hands" claims of the powdered soaps.

This month the Association of American Railroads, Member-Body of the American Standards Association, advertises:

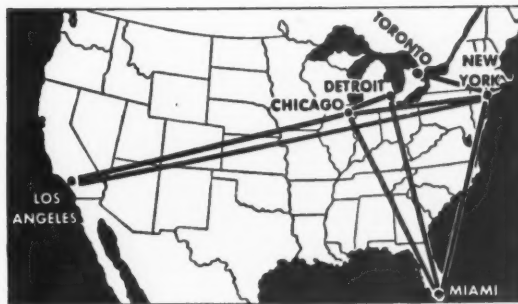
"The major commerce of this continent requires, every day, more than a hundred thousand railroad cars of many types, available for loading wherever and whenever freight is ready to move.

"And the railroads meet this vast and varied demand so smoothly that shippers take for granted that the cars will be on hand. . . .

"This involves not only a tremendous job of coordination but standardization to the point where every one of two million freight cars must be interchangeable and usable in trains with every other car—all parts must be standard replaceable parts so that repairs can be made in any railroad shop—or by emergency crews anywhere."

The story continues with typical examples of economies through standardization:

"In the old days, there were 56 sizes and kinds of axles for freight cars—now, all freight cars



Trail of One Pullman Car in One Month

"In a single month a typical Pullman car visited Toronto, New York, Miami, Detroit, Chicago, and Los Angeles. . . . Multiply this achievement by more than 8,000 Pullmans that cover over a billion miles each year, add the expert service of 21,000 Pullman employees, reckon the job of always having enough cars at the right places at the right times, and you get some idea of the enterprise required to maintain—on a nationwide, coordinated and uniform basis—this one phase of railroad service."—*From advertisement of Association of American Railroads.*

AAR Cooperates on National Standards

The standardization program of the Association of American Railroads includes an active interest in national standards through cooperation in the work of the American Standards Association. It is represented on the Electrical Standards Committee, the United States National Committee of the International Electrotechnical Commission, the Mechanical Standards Committee, as well as on 61 sectional committees working on standardization projects.

The AAR also has a voice in the administration of the ASA through its membership on the Standards Council and on the Board of Directors.

are equipped with axles of one standard design in five sizes for cars of varying capacities.

"Then, there were 58 different kinds of journal boxes—now, all cars have one standard design in five sizes for the different size cars.

"Then, there were 26 kinds of car couplers—now, there is one standard coupler, which will couple with and interchange with all previous designs which may still be in use.

"Then, there were 20 different kinds of brake shoes—now, only one standard design is universally used.

"Then, there were 27 different designs of brake heads—now, there is one standard design.

"Then, there were numerous designs and kinds of brake beams, and many kinds and sizes of wheels—now, there is one standard wheel, and one standard brake beam design of three sizes for different weights of cars."

"True, this is progress of a kind inconspicuous to the average eye," the advertisement concludes, "but it helps explain why the American Railroads are internationally recognized as the most reliable and progressive transportation system in the world!"

87 American Standards of Special Interest In Operating Manufacturing Industries

THE standardization work under the American Standards Association embraces a wide range of problems having a direct bearing on efficient operation of a manufacturing plant. Many standards in this field have been completed; some are under revision to keep up-to-date with changes in industrial practice; some are still under consideration. Of the 363 completed American Standards the 87 listed below are given as of special interest to manufacturing industries.

Many standardization problems were under consideration—and some had already been solved—when the American Engineering Standards Committee, (now the American Standards Association) came into being in 1918. But a variety of different organizations were working on the same problems, and confusion, instead of clarification, was the result. Five large engineering societies decided that something must be done to coordinate all standardization efforts. The American Society for Testing Materials, the American Institute of Mining and Metallurgical Engineers, the American Institute of Electrical Engineers, the American Society of Civil Engineers, and the American Society of Mechanical Engineers organized the American Engineering Standards Committee to act as a central body to head the standardization activities of corporations, technical societies, and trade associations.

The increasing interest in standardization brought to the ASA not only new mechanical projects, but also safety codes, building codes, standards for consumers' goods, and a broad program of electrical projects.

As a result, the American Engineering Standards Committee was reorganized as the American Standards Association in 1928.

The prestige of the organization has steadily grown during these years until now standards developed and approved under the American Standards Association have a broad national acceptance by governmental departments and industrial groups, and in many instances have been recognized by the courts as prima facie evidence of good practice.

The standards and projects still in development, listed here, lie primarily in the mechanical field. Tools and mechanical equipment—such as production machinery, conveyors, pipe lines, apparatus—are used in practically every manufacturing concern whatever its product may be. Other standards, completed or still in development, af-

fect factory buildings and safe working conditions in the plant.

Completed standards are indicated by the abbreviations for American Standard, American Tentative Standard, or American Recommended Practice. The sponsor organizations listed are those which have the administrative responsibility for the work of the committee.

A11-1930 Lighting Factories, Mills and Other Work Places, Code of (Bur. Lab. Stat. 556) *Am. Std.*

Scope: Recommended values for illumination for different classes of work in factories, mills and other work places; specifications for the minimum illumination required from the point of view of safety in traversed places during the time of use, or while work is in progress; rules for the avoidance of glare; rules for installation of exit and emergency lighting.

Sponsor: Illuminating Engineering Soc.

Chairman: Ward Harrison, Nela Park, Cleveland, Ohio (Illuminating Engineering Soc.)

Secretary: William F. Little, Electrical Testing Laboratories, 80th St. & East End Ave., New York, N. Y. (Illuminating Engineering Soc.)

A12-1932 Floor and Wall Openings, Railings and Toe Boards, Safety Code for *Am. Std.*

Scope: Rules applicable to places of employment having exposure to the hazards of falling persons or falling materials, including floor openings, and runways, with provisions for railings and toeboards.

Sponsor: Nat. Safety Council

Chairman: S. E. Whiting, Liberty Mutual Ins. Co., 1100 Park Sq. Bldg., Boston, Mass. (Nat. Assn. of Mutual Casualty Cos.)

Secretary: W. D. Keefe, National Safety Council, 20 N. Wacker Dr., Chicago, Ill. (Nat. Safety Council)

A13-1928 Identification of Piping Systems, Scheme for the *Am. Rec. Practice*

Scope: Identification of piping systems in industrial and power plants which are not buried in the ground; with special reference to personal hazards in times of accident at a plant; including conduits for the transport of gases, liquids, semi-liquids or plastics, but not including conduits filled with solids.

Sponsors: Am. Soc. of Mechanical Engrs.; Nat. Safety Council

Chairman: A. S. Hebble, Southern Pacific Co., American S. S. Line, Pier 49 N. R., New York, N. Y. (Soc. of Naval Architects and Marine Engrs.)

A21 Cast Iron Pipe and Special Castings, Specifications for

Scope: Unification of specifications for cast iron pipe, including: materials; dimensions; pressure rating; methods of manufacture (including such new developments as centrifugal casting), in so far as they may be necessary to secure satisfactory specification, elimination of unnecessary sizes and varieties; consideration of the possibil-

American Standards Increase Industry's Efficiency, Economy

by

Alfred Iddles¹

Chairman, Mechanical Standards Committee

THE mechanical standards included in the program of the American Standards Association are the core of industry's mass-production processes, permeating the entire fabric of manufacture.

Groups of these standards in several fields are already becoming essential factors in the steadily increasing rate of production per man-hour. The work on fits and tolerances for the control of dimensions in interchangeable production; a system of standard sizes of bolts, nuts, and rivets (much of which has been completed and is already in extensive use); a similar situation for small tools and machine tool elements; and a group of standards in pipe flanges and fittings (also well along and in use) are a few examples.

Trails are being blazed, on the other hand, into new and equally important

fields, such as surface finishes; classification of coals from lignite to anthracite both from the scientific and use basis; drawings and drafting room practice (already coming into wide use); speeds of machinery; and a system of standards permitting the measurement and control of sounds.

American Standard safety codes alone far more than justify the total cost of the American Standards Association. Today they constitute the backbone of the regulations of the various state governments for the protection of workmen and are used by insurance carriers as the basis of their advice to industry. Yet the Association's annual expenditure on this work would not cover the attorney's fees in a single important case. The new report on fundamentals of exhaust systems lays the basis for the engineering solution of the problem of removing dusts, gases, and fumes which are the chief sources of occupational diseases. Insurance companies estimate that 85 per cent of occupational diseases are respiratory. A striking illustration of the importance of this work is the fact that claims totaling \$500,000,000 in the silicosis field alone are now pending in the courts.

¹Vice-President, United Engineers and Constructors, Philadelphia.

ity of developing a coordinated scheme of metallic pipe and fittings applicable to all common mediums; and methods of making up points in so far as they are determining as to the dimensional design of cast iron pipe. The types of cast iron pipe to include: bell and spigot pipe; flanged pipe; flanged and bell mouth fittings and wall castings; pipe elbows, tees, Y's, return bends and other fittings not now included in standard lists; cast iron pipe threaded for flanges or couplings. The standardization is not to include: methods of installing pipe and similar matters, except as to the making up of joints with relationship to the dimensional standardization of pipe and fittings as noted above.

Sponsors: Am. Gas Assn.; Am. Soc. for Testing Materials; Am. Water Works Assn.; New England Water Works Assn.

Chairman: Thomas H. Wiggin, Federal Water Service Corp., 90 Broad St., New York, N. Y. (Am. Water Works Assn.)

Vice-Chairman: N. F. S. Russell, U. S. Pipe and Foundry Co., Burlington, N. J. (U. S. Pipe and Foundry Co.)

Secretary: C. C. Simpson, Jr., Consolidated Edison Co. of N. Y., Inc., 4 Irving Pl., New York, N. Y. (Am. Gas Assn.)

- A21a¹ Dimensions
- A21b Metallurgy, Processes and Tests
- A21c Corrosion and Protective Coatings
- A35 Manhole Frames and Covers *Standard Under Development*

Scope: Standardization of design, material and dimensions of manhole frames and covers. (In cooperation with the Division of Simplified Practice.)

Sponsors: Am. Soc. of Civil Engrs.; Telephone Group
Chairman: L. B. Fish, Bell Telephone Laboratories, Inc., 463 West St., New York, N. Y. (Bell Telephone System)

Secretary: A. B. Campbell, Edison Electric Inst., 420 Lexington Ave., New York, N. Y. (Edison Electric Inst.)

¹Italicized numerals indicate subprojects. Completed standards have the year of approval after the project number. When no year is given the standards are still under development.

Committee of Experts Heads ASA Mechanical Standards

The Standards Council, final authority of the American Standards Association on initiation and approval of standards, recently organized a body of experts to advise it on mechanical standardization problems. This group, the Mechanical Standards Committee, considers questions of conflict between standards or between committees, and coordination of standards' provisions, as well as recommendations on approval of standards.

Members of the Mechanical Standards Committee are:

Alfred Iddles, American Society of Mechanical Engineers, *Chairman*

F. H. Morehead, Manufacturers Standardization Society of the Valve and Fittings Industry, *Vice-Chairman*

John Gaillard, American Standards Association, *Secretary*

American Foundrymen's Association, *LeRoy M. Sherwin*

American Gear Manufacturers Association, *To be Appointed*

American Institute of Bolt, Nut, and Rivet Manufacturers, *J. H. Edmonds*

American Iron and Steel Institute, *To be Appointed*

American Petroleum Institute, *To be Appointed*
American Society of Mechanical Engineers, *Alfred Iddles, Walter Samans (alt.)*

American Society for Testing Materials, *H. H. Morgan, R. E. Hess (alt.)*

American Transit Association, *R. H. Dalglish, Frank T. Ward (alt.)*

ASA Electric Light and Power Group, *Edwin B. Ricketts, Alexander Maxwell (alt.)*

ASA Telephone Group, *D. Levinger, J. R. Shea (alt.)*

Association of American Railroads, *W. I. Cantley*
Grinding Wheel Manufacturers Association, *A. Rousseau*

Heating, Piping, and Air Conditioning Contractors National Association, *H. M. Hart*

Manufacturers Standardization Society of the Valve and Fittings Industry, *F. H. Morehead, A. M. Houser (alt.)*

National Bureau of Standards, *I. J. Fairchild, H. L. Whittemore (alt.)*

National Electrical Manufacturers Association, *Frank Thornton, Jr., L. F. Adams (alt.)*

National Machine Tool Builders Association, *F. O. Hoagland*

Navy Department, *Officer-in-charge, Specification Section, Design Division, Bureau of Engineering; Officer-in-charge, Design Section, Bureau of Ordnance (alt.)*

Society of Automotive Engineers, *C. W. Spicer, A. M. Wolf (alt.)*

War Department, *Lt. Col. Walter L. Clark*

A39-1933 Window Cleaning, Safety Code for *Am. Rec. Practice*

Scope: All window washing operations performed on the outside of office buildings and mercantile establishments more than one story high, or in which the sills of windows are located more than ten feet above grade or adjoining flat roof.

Sponsor: Nat. Safety Council

Chairman: G. F. Collins, Peoples Gas Bldg., 122 S. Michigan Blvd., Chicago, Ill. (Nat. Assn. of Bldg. Owners and Mgrs.)

Secretary: G. E. Burns, Nat. Safety Council, 20 N. Wacker Dr., Chicago, Ill. (Nat. Safety Council)

B1 Screw Threads, Standardization and Unification of

Scope: Nomenclature of screw threads; form of threads; diameters and pitches of screws for various uses; classification of thread fits, tolerances and allowances for threaded parts; and the gaging of threads. Screw threads for fire hose couplings are not included within this scope.

Sponsors: Am. Soc. of Mechanical Engrs.; Soc. of Automotive Engrs.

Chairman: Ralph E. Flanders, Jones & Lamson Machine Co., Springfield, Vt. (Am. Soc. of Mechanical Engrs.)

Secretary: Earle Buckingham, Massachusetts Inst. of Technology, Cambridge, Mass. (Soc. of Automotive Engrs.)

B1.1-1935 Screw Threads for Bolts, Nuts, Machine Screws, and Threaded Parts *Am. Std.*

B1b Screw Thread Gages and Gaging of Screw Threads

B2 Pipe Thread

Scope: Nomenclature of screw threads; form of threads; diameters and pitches of screws for various uses; classification of thread fits, tolerances and allowances for threaded parts; and the gaging of threads. Screw threads for fire hose couplings are not included within this scope.

Sponsors: Am. Gas Assn.; Am. Soc. of Mechanical Engrs.

Chairman: Alten S. Miller, 80 Westcott Rd., Princeton, N. J. (Am. Gas Assn.)

Acting Secretary: C. B. LePage, Am. Soc. of Mechanical Engrs., 29 W. 39th St., New York, N. Y.

B2-1919 Pipe Thread *Am. Std. (Under Re- vision)*

B2a Screw Threads for Rigid Electrical Conduits

B2b Taper Pipe Threads

B2c Straight Pipe Threads

B2d Plumbers' Threads

B3 Ball and Roller Bearings

Scope: Boundary dimensions of ball and roller bearings for radial and thrust loads or combinations thereof, as affecting the interchange or replacement of such bearings in machinery; and the tolerances on such dimensions.

Sponsors: Am. Soc. of Mechanical Engrs.; Soc. of Automotive Engrs.

Chairman: F. W. Gurney, Setauket, L. I. (Soc. of Automotive Engrs.)

Vice-Chairman: W. P. Kennedy, Kennedy Engineering Co., 1767 Broadway, New York, N. Y. (Am. Soc. of Mechanical Engrs.)

Secretary: R. S. Burnett, Soc. of Automotive Engrs., 29 W. 39th St., New York, N. Y.

- B3.1-1933** Radial Ball Bearings, Single Row Type and Separable (Open) Type
Am. Std.
- B3.2-1930** Annular Ball and Roller Bearings, Wide Type *Am. Rec. Practice*
- B3.3-1933** Ball Bearings, Angular Contact Type
Am. Std.
- B3c** Taper Roller Bearings
- B3d** Adapter-Sleeve Bearings
- B4** Cylindrical Parts and Limit Gages, Allowances and Tolerances for
Scope: Nomenclature and classification of fits between cylindrical parts, including allowances and tolerances for interchangeable manufacture; classification and fixing of standard tolerances for plain limit gages.
Sponsor: Am. Soc. of Mechanical Engrs.
Secretary: C. E. Rundorff, National Twist Drill Co., 6522 Brush St., Detroit, Mich. (Member-at-Large)
- B4a-1925** Tolerances, Allowances and Gages for Metal Fits *Am. Tent. Std. (Under Revision)*
- B4b** Plain Limit Gages, Methods of Gaging and Specifications for
- B5** Small Tools and Machine Tool Elements, Standards for
Scope: The standardization of the elements of machine tool construction and operation, and of tool and work holding elements and associated appurtenances, including driving mechanisms that constitute an inherent part of the machine tool; and relating primarily to the use of machine tools on manufacturing operations in mechanical industry; sizes, capacities and clearances of machine tools and of other work and tool holding parts; length of stroke, travel and other movements and adjustments; parts and elements for holding and adjusting, guiding or aligning work or tools, including bolts and nuts, slots, bushings and tapers; drills, taps, reamers, cutters, countersinks, chucks, jigs, etc.
Sponsors: Am. Soc. of Mechanical Engrs.; Nat. Machine Tool Builders Assn.; Soc. of Automotive Engrs.
Chairman: Clarence W. Spicer, Spicer Manufacturing Corp., 4100 Bennett Rd., Toledo, Ohio (Soc. of Automotive Engrs.)
Vice-Chairman: Frank O. Hoagland, Pratt & Whitney Division, Niles-Bement-Pond Co., Hartford, Conn. (Nat. Machine Tool Builders Assn.)
Secretary: Joseph A. Anglada, Anglada Motor Corp., 11 Park Pl., New York, N. Y. (Soc. of Automotive Engrs.)
- B5a-1927** T-Slots, their Bolts, Nuts, Tongues and Cutters *Am. Tent. Std.*
- B5b-1929** Tool Holder Shanks and Tool Post Openings *Am. Std.*
- B5c-1930** Milling Cutters: Nomenclature, Diameters, Thickness and Other Important Dimensions *Am. Std.*
- B5e-1930** Taps: Cut and Ground Threads *Am. Std.*
- B5.5-1932** Rotating Air Cylinders and Adapters *Am. Std.*
- B5.6-1935** Jig Bushings *Am. Std.*
- B5.7-1936** Circular and Dovetail Forming Tool Blanks *Am. Std.*
- B5.8-1936** Chucks and Chuck Jaws for Turret Lathes and Automatic Lathes *Am. Std.*
- B5.9-1936** Lathe Spindle Noses for Turret Lathes and Automatic Lathes *Am. Std.*
- B5.10** Machine Tapers, Self-Holding Taper Series
- B5f** Machine Tools, Designations and Working Ranges of
- B5h** Spindle Noses and Collets for Machine Tools, Standardization of
- B5i** Punch Press Tools
- B5j** Forming Tools and Holders
- B5k** Twist Drill Sizes
- B5m** Splined Shafts and Splines, Dimensions of
- B5n** Electric Welding Dies and Electrode Holders
- B5o** Milling Machine Tables
- B5p** Rotating Tool Shanks
- B5q** Small Tools and Machine Tool Elements, (Nomenclature for)
- B5r** Multiple Spindle (Drill Heads) and Drill Head Spindles and Bearings, Standardization of
- B6** Gears, Standardization of
Scope: Standardization of spur, helical, herringbone, bevel and worm gearing, covering general gear proportions; tooth form; mounting of gears; selection of materials; inspection of gears; nomenclature.
Sponsors: Am. Gear Mfrs. Assn.; Am. Soc. of Mechanical Engrs.
Chairman: Benjamin F. Waterman, Brown & Sharpe Manufacturing Co., Providence, R. I. (Am. Gear Mfrs. Assn.)
Secretary: C. B. LePage, Am. Soc. of Mechanical Engrs., 29 W. 39th St., New York, N. Y.
- B6.1-1932** Spur Gear Tooth Form *Am. Std.*
- B6.2-1933** Gear Materials and Blanks *Am. Rec. Practice*

- B6a Nomenclature
 B6c Helical Gears
 B6d Worm Gears
 B6e Bevel Gears
 B6g Inspection
 B6h Power Rating

B7-1935 Abrasive Wheels, Safety Code for the Use, Care and Protection of *Am. Std.*

Scope: Rules and specifications necessary to insure safety in the use of abrasive wheels operating at surface speeds in excess of 2000 feet per minute. The specifications relate to protective hoods, flanges, bands and chucks, and rules for the proper mounting and safe operation of wheels are included.

Sponsors: Grinding Wheel Mfrs. Assn.; International Assn. of Industrial Accident Boards and Commissions.

Secretary: A. Rousseau, Norton Co., Worcester, Mass. (Grinding Wheel Mfrs. Assn.)

B8-1932 Protection of Industrial Workers in Foundries, Safety Code for *Am. Std.*

Scope: Protection of workers in foundries making castings from iron, steel, aluminum, brass, bronze and other similar alloys. The code deals exclusively with conditions in the foundry proper.

Sponsors: Am. Foundrymen's Assn.; Nat. Founders' Assn.

Chairman and Secretary: F. H. Elam, Am. Steel Foundries, 410 N. Michigan Ave., Chicago, Ill. (Am. Foundrymen's Assn.)

B11-1926 Power Presses and Foot and Hand Presses, Safety Code for (Bur. Lab. Stat. 430) *Am. Std.*

Scope: Safety requirements relating to all power presses, foot presses and hand presses, viz., machines fitted with rams and dies for the purpose of blanking, trimming, drawing, punching or stamping material, also including plate shears and plate punches, but not including bull dozers, hot-metal presses, hammers, bending presses or brakes, power screw or fitting presses, air presses and hydraulic presses.

Sponsor: Nat. Safety Council

Chairman: C. B. Auel, Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. (Nat. Safety Council)

Secretary: W. Dean Keefer, Nat. Safety Council, 20 N. Wacker Dr., Chicago, Ill. (Nat. Safety Council)

B15-1927 Mechanical Power Transmission Apparatus, Safety Code for *Am. Std.*

Scope: Safeguarding of moving parts of equipment used in the mechanical transmission of power, including prime movers, intermediate equipment and driven machines, excluding point of operation. This includes connecting rods; cranks; fly wheels; shafting; spindles; pulleys; belts (except flat belts one inch or less in width; or round belts one-half inch or less in diameter); link belts; chains; ropes and rope drives; gears; sprockets; friction drives; cams; couplings; clutches; counter weights; and other revolving or reciprocating parts, up to but not including the point of operation.

Also in process of development: Safety provisions for construction and operation of governors, clutches, belt shifters and other mechanical means of controlling power.

Sponsors: Am. Soc. of Mechanical Engrs.; International Assn. of Industrial Accident Boards and Commissions; Nat. Bur. of Casualty and Surety Underwriters

Chairman: C. B. Auel, Employees Service Dept., Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. (Am. Soc. of Mechanical Engrs.)

Secretary: Philip G. Rhoads, J. E. Rhoads and Sons, Wilmington, Del. (Mechanical Power Engineering Associates)

B16 Pipe Flanges and Fittings

Scope: Dimensional standardization (exclusive of screw threads) and designation of materials for pipe flanges, and flanged and screwed fittings for pipes carrying steam, gas, air, ammonia, water, etc. The standardization of face to face dimensions of ferrous gate, globe, angle and check valves having flanged connecting ends and WSP ratings of 125 and 250 lb per square inch.

Sponsors: Am. Soc. of Mechanical Engrs.; Heating, Piping and Air Conditioning Contractors Nat. Assn.; Mfrs. Standardization Soc. of the Valve and Fittings Industry.

Chairman: Collins P. Bliss, Engineering Index Service, 29 W. 39th St., New York, N. Y. (Am. Soc. of Mechanical Engrs.)

Secretary: John J. Harman, Room 1924, 420 Lexington Ave., New York, N. Y. (Mfrs. Standardization Soc. of the Valve and Fittings Industry)

B16a-1928 Cast Iron Pipe Flanges and Flanged Fittings, All Sizes for Maximum WSP of 125 Lb per Sq In. (Gage) (*Out of Print*) *Am. Std.*

B16b-1928 Cast Iron Pipe Flanges and Flanged Fittings, All Sizes for Maximum WSP of 250 Lb per Sq In. (Gage) *Am. Std.*

B16b1-1931 Cast Iron Pipe Flanges and Flanged Fittings for Maximum Non-Shock Working Hydraulic Pressure of 800 Lb per Sq In. (Gage) at Ordinary Air Temperatures *Am. Std.*

B16b2-1931 Cast Iron Pipe Flanges and Flanged Fittings, All Sizes for Maximum WSP of 25 Lb per Sq In. (Gage) *Am. Tent. Std.*

B16c-1927 Malleable Iron Screwed Fittings for Maximum WSP of 150 Lb per Sq In. (Gage) *Am. Tent. Std.*

B16d-1927 Cast Iron Screwed Fittings for Maximum WSP of 125 and 250 Lb *Am. Tent. Std.*

B16e-1932 Steel Flanged Fittings and Companion Flanges *Am. Std.*

B16e1-1935 Addendum to American Standard Steel Flanged Fittings and Companion Flanges *Am. Std.*

B16e2-1936 Pipe Plugs of Cast Iron, Malleable Iron, Cast Steel, or Forged Steel *Am. Std.*

B16g-1929 Cast Iron Long Turn Sprinkler Fittings (Screwed and Flanged) *Am. Std.*

ASA Committees Consider Diverse Viewpoints

The success of the American Standards Association lies in the opportunity it gives for presenting a diversity of viewpoints and opinions and for arriving at an agreement which the American Standards Association can approve as an American Standard.

Typical of the variety of interests represented on the committees working under ASA procedure is the membership of the Sectional Committee on Pipe Flanges and Fittings (B16).

This committee, which is attacking a problem affecting one of the most widely used products today, is under the administrative guidance of the American Society of Mechanical Engineers, the Heating, Piping, and Air Conditioning Contractors National Association, and the Manufacturers Standardization Society of the Valve and Fittings Industry.

It is organized as follows:

Collins P. Bliss, American Society of Mechanical Engineers, *Chairman*

John J. Harman, Manufacturers Standardization Society of the Valve and Fittings Industry, *Secretary*

Am. Soc. of Mechanical Engrs. (Sponsor), *Collins P. Bliss, Lester Benoit, Howard A. Hoffer, Edward L. Moreland, W. S. Morrison, J. Roy Tanner*

Heating, Piping and Air Conditioning Contractors Nat. Assn. (Sponsor), *William W. Hubbard, George P. Nachman, S. Lewis Land (alt.), John H. Zink*

Mfrs. Standardization Society of the Valve and Fittings Industry (Sponsor), *Gus A. Daeuble, Jr., S. Griswold Flagg, III, John J. Harman, Arthur M. Houser, John Knickerbacker, F. Hugh Morehead, J. Howard Williams*

Am. Bur. of Shipping, *Jacob Bergvall*

Am. Gas Assn., *Henry L. Underhill*

Am. Inst. of Refrigeration, *L. S. Morse*

Am. Marine Stds. Committee, *Jacob Bergvall*

Am. Petroleum Inst., *Walter Samans, A. D. Sanderson, L. D. Burritt (alt.)*

Am. Soc. of Heating and Ventilating Engrs., *Thomas M. Dugan*

Am. Soc. of Mechanical Engrs. Boiler Code Committee, *David S. Jacobus*

Am. Soc. of Refrigerating Engrs., *L. Howard Jenks*

Am. Soc. for Testing Materials, *Sabin Crocker, Vincent T. Malcolm*

Am. Transit Assn., *C. W. Squier*

Am. Water Works Assn., *Frank A. Barbour, William W. Hurlbut*

Assn. of Am. Railroads—Engineering Division—Construction and Maintenance Section—Water Service, Fire Protection and Sanitation Committee, *Clarence R. Knowles*

Assn. of Am. Railroads—Engineering Division—Electrical Section, *J. V. B. Duer*

Assn. of Am. Railroads—Engineering Division—Signal Section, *E. K. Post*

Assn. of Am. Railroads, Mechanical Division, *W. I. Cantley, Burton P. Flory*

Assn. of Edison Illuminating Cos., *Sabin Crocker, William S. Morrison*

Edison Electric Inst., *Abbott L. Penniman*

Georgia Ice Mfrs. Assn., *C. T. Baker*

Hydraulic Inst., *Martin B. MacNeille*

Nat. Assn. of Ice Industries, *Ferdinand Fink*

Nat. Assn. of Master Plumbers of U. S., *Frank B. Lasette*

Nat. Assn. of Practical Refrigerating Engrs., *H. G. Guild*

Nat. Automatic Sprinkler Assn., *J. Howard Williams*

Nat. Fire Protection Assn., *Arthur L. Brown*

New England Water Works Assn., *William R. Conard*

Power Piping Soc., *Henry E. Haller*

Refrigerating Machinery Assn., *E. S. H. Baars (alt.)*

Soc. of Naval Architects and Marine Engrs., *Jacob Bergvall*

U. S. Dept. of Commerce, Bur. of Marine and Navigation, *James W. Wilson*

U. S. Navy Dept., Bur. of Construction and Repair

U. S. Navy Dept., Bur. of Engineering

U. S. Navy Dept., Bur. of Yards and Docks, *L. W. Bates*

Members-at-Large, *J. S. Hess, Francis Hodgkinson, Ludwig Skog, J. Hall Taylor, George W. Watts*

B16e3	Steel Welding Neck Flanges
B16h	Ammonia Flanged Fittings and Companion Flanges
B16i	Face to Face Dimensions of Ferrous Flanged Valves
B16j	Malleable Iron or Steel Unions for a Minimum Steam Pressure of 300 Lb
B16.9	Welded Fittings

B17 Shafting, Standardization of

Scope: Diameters of transmission and machinery shafting and tolerances on shafting stock; choice and proportions of shafting keys and tolerances for key stock; development of standard formulas and methods to be used in determining transmission shafting sizes.

Sponsor: Am. Soc. of Mechanical Engrs.

Chairman: Cloyd M. Chapman, Room 1001, 230 W. 41st St., New York, N. Y. (Am. Soc. of Mechanical Engrs.)

Secretary: C. B. LePage, Am. Society of Mechanical Engrs., 29 W. 39th St., New York, N. Y.

- B17.1-1934** Shafting and Stock Keys *Am. Std.*
- B17c-1927** Transmission Shafting, Code for Design of *Am. Tent. Std.*
- B17f-1930** Woodruff Keys, Keyslots and Cutters *Am. Std.*
- B18** Bolt, Nut and Rivet Proportions
Scope: Standardization of dimensions, material and nomenclature of rivets, hexagonal and square head bolts and nuts, slotted head bolts and machine screws; track bolts, carriage bolts and special bolts and nuts for agricultural machinery; but not including the standardization of screw threads.
Sponsors: Am. Soc. of Mechanical Engrs.; Soc. of Automotive Engrs.
Chairman: Arthur E. Norton, Harvard University, Cambridge, Mass. (Am. Soc. of Mechanical Engrs.)
Secretary: W. P. Acres, Am. Inst. of Bolt, Nut and Rivet Mfrs., 719 Guardian Building, Cleveland, Ohio (Am. Inst. of Bolt, Nut and Rivet Mfrs. alt.)
- B18a-1927** Small Rivets *Am. Std.*
- B18c-1930** Slotted Head Proportions: Machine Screws, Cap Screws and Wood Screws *Am. Std.*
- B18d-1930** Track Bolts and Nuts *Am. Std.*
- B18e-1928** Round Unslotted Head Bolts *Am. Tent. Std.*
- B18f-1928** Plow Bolts, Dimensions of *Am. Tent. Std.*
- B18g-1929** Tinnern's, Coopers' and Belt Rivets *Am. Std.*
- B18.2-1933** Wrench-Head Bolts and Nuts and Wrench Openings *Am. Std.*
- B18.3-1936** Socket Set Screws and Socket Head Cap Screws *Am. Std.*
- B18b1** Stud and Stud Bolt Dimensions
- B18.4** Large Rivets
- B19** Compressed Air Machinery and Equipment, Safety Code for (*Standard Under Development*)
Scope: Rules for the construction and use of compressors, tanks, pipe lines and the utilization apparatus where compressed air is the active agent.
Sponsors: Am. Soc. of Mechanical Engrs.; Am. Soc. of Safety Engrs.—Engineering Section—Nat. Safety Council
Chairman: Dan L. Royer, Ocean Accident & Guarantee Corp., Ltd., 1 Park Ave., New York, N. Y. (Am. Soc. of Safety Engrs.—Engineering Section—Nat. Safety Council)
Secretary: W. Dean Keefer, National Safety Council, 20 N. Wacker Dr., Chicago, Ill. (Nat. Safety Council)
- B20** Conveyors and Conveying Machinery, Safety Code for *Standard Under Development*
Scope: Safe operation and maintenance of gravity, belt, chain flight, bucket, apron, screw and jiggling conveyors, car hauls, aerial cableways, overhead trolleys and pneumatic tubes.
Sponsors: Am. Soc. of Mechanical Engrs.; Nat. Bur. of Casualty & Surety Underwriters
Temporary Secretary: J. A. Dickinson, Nat. Bureau of Standards, Washington, D. C. (U. S. Dept. of Commerce, Nat. Bur. of Stds.)
- B24-1927** Forging and Hot Metal Stamping, Safety Code for (Bur. Lab. Stat. 451) *Am. Rec. Practice*
Scope: All classes of power-forging machinery for both drop forging and flat-die forging, including steam hammers, pneumatic hammers, mechanically operated hammers, hydraulic presses, trimming presses, bulldozers, upsetting machines, and bolt-heading and rivet-making machines, hot saws; and incidental operations in connection with such machinery.
Sponsors: Am. Drop Forging Inst.; Nat. Safety Council
Chairman: G. A. Kuechenmeister, Dominion Forge & Stamping Co., Ltd., Walkerville, Ontario, Canada (Am. Drop Forging Inst.)
Secretary: W. Dean Keefer, Nat. Safety Council, 20 N. Wacker Drive, Chicago, Ill. (Nat. Safety Council)
- B26-1925** Fire-Hose Coupling Thread *Am. Std.*
Scope: Threaded parts of fire-hose couplings, hydrant outlets, stand-pipe connections, Siamese connections, and all other special fittings on fire lines where fittings of 2½, 3, 3½ and 4½ inches nominal diameter are used.
Sponsors: Am. Soc. of Mechanical Engrs.; Am. Water Works Assn.; Nat. Board of Fire Underwriters
- B27** Plain and Lock Washers
Scope: Cast iron and malleable iron plain washers, and steel lock and plain washers.
Sponsors: Am. Soc. of Mechanical Engrs.; Soc. of Automotive Engrs.
Chairman: Clarence W. Squier, R. F. D. No. 2, Huntington, Long Island, N. Y. (Am. Transit Assn.)
- B27a** Plain Washers
- B27b** Lock Washers
- B29** Transmission Chains and Sprockets
Scope: Formulation of American standards for transmission roller chains and sprocket teeth, based on the standards already adopted by the Society of Automotive Engineers, the American Society of Mechanical Engineers, and the American Gear Manufacturers Association; and the study of the possibilities of standardizing the so-called silent type of transmission chains and sprockets.
Sponsors: Am. Gear Mfrs. Assn.; Am. Soc. of Mechanical Engrs.; Soc. of Automotive Engrs.
Chairman: F. V. Hetzel, P. O. Box 336, West Chester, Pa. (Am. Soc. of Mechanical Engrs.)
- B29a-1930** Roller Chains, Sprockets and Cutters (*Out of print*) *Am. Std.*
- B29b** Silent Chains

B30 Cranes, Derricks and Hoists, Safety Code for *Standard Under Development*

Scope: Structural and operating rules for safety of overhead, gantry and locomotive cranes, derricks, hoists and slings and chains; but not including apparatus used in mines.

Sponsors: Am. Soc. of Mechanical Engrs.; U. S. Navy Dept., Bur. of Yards and Docks

Chairman: J. C. Wheat, Industrial Brownhoist Corp., Bay City, Michigan (Locomotive Crane Mfrs. Assn.)

Secretary: Benjamin F. Tillson, 470 Grove St., Upper Montclair, N. J. (Am. Inst. of Mining & Metallurgical Engrs.)

B31 Pressure Piping, Code for

Scope: Design, manufacture, test, installation and operation of pressure piping systems.

Sponsor: Am. Soc. of Mechanical Engrs.

Chairman: Edwin B. Ricketts, New York Edison Co., 4 Irving Place, New York, N. Y. (Edison Electric Inst.)

Secretary: Frederick Lydecker, Public Service Electric & Gas Co., Newark, N. J. (Am. Gas Assn.)

B31.1-1935 Pressure Piping, Code for *Am. Tent. Std.*

B31b Hydraulic Piping

B31d Refrigerating Piping

B31f Piping Materials and Identifications

B31g Fabrication Details

B32 Wire and Sheet Metal Gages *Standard Under Development*

Scope: The standardization of a method of designating the diameter of metal and metal alloy wire, the thickness of metals and metal alloys in sheet, plate and strip form and wall thickness of tubing, piping and casing made of these materials; and the establishment of a standard series, or standard series, of nominal sizes and of tolerances for wires, sheets and strips.

Sponsors: Am. Soc. of Mechanical Engrs., Soc. of Automotive Engrs.

Chairman: W. H. Hutchins, Delco Appliance Division, General Motors Corp., Rochester, N. Y. (Soc. of Automotive Engrs.)

B33 Hose Coupling Screw Threads

Scope: Nominal values and manufacturing limits for the dimensions of screw threads for small hose couplings, ranging from $\frac{1}{2}$ in. to 2 in. nominal size, and for hose couplings, other than fire hose couplings, with a nominal size larger than 2 in.

Sponsor: Am. Soc. of Mechanical Engrs.

Chairman: Henry W. Bearce, Division of Weights and Measures, Connecticut Ave. and Van Ness St., Washington, N. C. (U. S. Dept. of Commerce, Nat. Bur. of Stds.)

Secretary: Arthur L. Brown, 184 High St., Boston, Mass. (Associated Factory Mutual Fire Insurance Cos.)

B33.1-1935 Hose Coupling Screw Threads for all Connections Having Nominal Inside Diameters of $\frac{1}{2}$, $\frac{3}{4}$, 1, 1 $\frac{1}{4}$, 1 $\frac{1}{2}$, and 2 Inches *Am. Std.*

B36 Dimensions and Materials of Wrought Iron and Wrought Steel Pipe and Tubing, Standardization of

Scope: Standardization of the design, dimensions and material of welded wrought iron pipe, of welded and seamless steel pipe, and of boiler tubing, including pipe and tubing for high temperatures and pressures.

Sponsors: Am. Soc. of Mechanical Engrs.; Am. Soc. for Testing Materials

Chairman: Harold H. Morgan, Robert W. Hunt Co., 2200 Insurance Exchange Bldg., Chicago, Ill. (Am. Soc. for Testing Materials)

Secretary: Sabin Crocker, Detroit Edison Co., 2000 Second Ave., Detroit, Mich. (Nat. District Heating Assn.)

B36.1-1936 Welded and Seamless Steel Pipe, Specifications for (ASTM A53-36) *Am. Std.*

B36.2-1934 Welded Wrought-Iron Pipe, Specifications for (ASTM A72-33) *Am. Std.*

B36.3-1936 Lap-Welded and Seamless Steel Pipe for High-Temperature Service, Specifications for (ASTM A106-36) *Am. Std.*

B36.4-1936 Electric-Fusion-Welded Steel Pipe (Sizes 30 in. and Over), Specifications for (ASTM A134-36) *Am. Std.*

B36.5-1935 Electric - Resistance - Welded Steel Pipe, Specifications for (ASTM A135-34) *Am. Std.*

B36.6-1935 Forge-Welded Steel Pipe, Specifications for (ASTM A136-34) *Am. Std.*

B36.7-1935 Lock-Bar Steel Pipe, Specifications for (ASTM A137-34) *Am. Std.*

B36.8-1935 Riveted Steel and Wrought-Iron Pipe, Specifications for (ASTM A138-34) *Am. Std.*

B36.9-1936 Electric-Fusion-Welded Steel Pipe (Sizes 8 in. to but not Including 30 in.), Specifications for (ASTM A139-36) *Am. Std.*

B36.10-1935 Wrought-Iron and Wrought-Steel Pipe *Am. Tent. Std.*

B40 Pressure and Vacuum Gages, Specifications for *Standard Under Development*

Scope: Nomenclature and definitions of pressure and vacuum gages; capacity ratings; case sizes and mounting holes with a view to obtaining maximum interchangeability; dials and graduations and designation of units; indicator hands and bushings; zero stop pins; bezel rings and their attachment to the gage; connections to the gage; method of expressing allowable errors or accuracy of the gage; requirements for accuracy in so far as establishment of such requirements proves to be feasible; methods of testing; rules and specifications for installation and use of pressure and vacuum gages.

Sponsor: Am. Soc. of Mechanical Engrs.

Temporary Chairman: Melvin D. Engle, Edison Electric Illuminating Co. of Boston, 39 Boylston St., Boston, Mass. (Electric Light and Power Group)

Temporary Secretary: Arnold W. Lenderoth, Crosby Steam Gage & Valve Co., 120 Liberty St., New York, N. Y., (Am. Soc. of Mechanical Engrs.)

- B41 Stock Sizes, Shapes and Lengths for Iron and Steel Bars, Including Flats, Squares, Rounds and other Shapes *Standard Under Development***
Scope: The standardization of the dimensions of cross-sections and lengths of hot rolled and cold finished iron and steel bars having the following shapes: (1) rounds, (2) squares, (3) triangular sections, (4) hexagons, (5) octagons, (6) half-rounds, (7) half-ovals, (8) square-edge flats, (9) nut steel flats, (10) bevelled cornered squares, (11) tolerances on the dimensions of the bars included in items 1 to 10 inclusive, (12) reinforcing bars for concrete. Nationally recognized standards are to be accepted where possible.
Sponsor: Am. Soc. of Mechanical Engrs.
Temporary Chairman: F. H. Frankland, Am. Inst. of Steel Construction, Inc., 200 Madison Ave., New York, N. Y. (Am. Inst. of Steel Construction)
- B42 Leather Belting, Specifications for *Standard Under Development***
Scope: Specifications for vegetable tanned leather belting, including raw material, construction, marking, physical and chemical tests.
Sponsor: Am. Soc. of Mechanical Engrs.
Secretary: Harris E. Whiting, Whiting Leather & Belting Co., 30-30 Northern Blvd., Long Island City, N. Y. (Member-at-Large)
- B43 Machine Pins, Dimensions of *Standard Under Development***
Scope: Taper, split, straight and dowel pins.
Sponsors: Am. Soc. of Mechanical Engrs.; Soc. of Automotive Engrs.
Temporary Chairman: Myron E. Steczynski, Knight Soda Fountain Co., Chicago, Ill. (Am. Soc. of Mechanical Engrs.)
- B45 Foundry Equipment and Supplies. Standardization of**
Scope: Standardization of such foundry equipment and supplies as pattern plates and molding machine parts affecting interchangeability of patterns, flask pins and holes, general dimensions of flasks for jobbing work, ladle and ladle shank sizes, ladle sleeves, stoppers and nozzles, stock core print sizes, shapes and finish allowances, pattern markings, rapping plates, fillet sizes and dowel pins for metal patterns and metal core boxes.
Sponsors: Am. Soc. of Mechanical Engrs.; Am. Foundrymen's Assn.
Chairman: Edwin S. Carman, 1643 Lee Road, Cleveland, Ohio. (Am. Foundrymen's Assn.)
- B45.1-1932 Foundry Patterns of Wood (CS19-32) *Am. Rec. Practice***
- B46 Surface Qualities, Classification and Designation of *Standard Under Development***
Scope: Classification and designation of surfaces according to quality of surface.
Sponsors: Am. Soc. of Mechanical Engrs., Soc. of Automotive Engrs.
Chairman: H. K. Rutherford, War Dept., Washington, D. C. (U. S. War Dept.)
Secretary: H. J. Wills, Carborundum Co., Niagara Falls, N. Y. (Am. Supply and Machine Mfrs. Assn., alt.)
- B47-1933 Gage Blanks (CS 8-33) *Am. Std.***
- B48.1-1933 Inch-Millimeter Conversion for Industrial Use *Am. Std.***
- B49-1932 Shaft Couplings, Integrally Forged Flange Type for Hydro-Electric Units *Am. Std.***
- B50 Unification of Rules for the Dimensioning of Furnaces for Burning Solid Fuel *Standard Under Development***
Scope: Unification of rules for the setting of small boilers utilizing solid fuel.
Sponsor: Am. Soc. of Mechanical Engrs.
Chairman: Carlos E. Bronson, Kewanee Boiler Corp., Kewanee, Ill. (Steel Heating Boiler Inst.)
Secretary: Marc G. Bluth, 307 N. Michigan Ave., Chicago, Ill. (Member-at-Large)
- B51 Air Cleaning Devices Used in General Ventilation Work. Code for Testing and Rating *Draft Standard Under Consideration*³**
- 01-1930 Woodworking Plants, Safety Code for (Bur. Lab. Stat. 519) *Am. Std.***
Scope: Safe operation and maintenance of woodworking machinery, including cooperage and making of veneer; deals primarily with the point of operation hazards of woodworking machinery.
Sponsors: International Assn. of Industrial Accident Boards and Commissions; Nat. Bur. of Casualty & Surety Underwriters.
- Z2-1922 Protection of the Heads and Eyes of Industrial Workers, Safety Code for (Out of Print) (Bur. Stds. Handbook 2) *Am. Std.***
- Z4 Industrial Sanitation, Safety Code for**
Scope: General sanitary requirements of industrial plants, construction operations and temporary labor camps, including water supply, drainage, sanitary conveniences, disposition of refuse and waste.
Sponsor: U. S. Treasury Dept., Bur. of the Public Health Service.
Chairman: Dr. R. R. Sayers, Office of Industrial Hygiene and Sanitation, U. S. Public Health Service, Washington, D. C. (U. S. Treasury Dept., Bur. of the Public Health Service)
Secretary: Cyril Ainsworth, American Standards Association, 29 W. 39th St., New York, N. Y.
- Z4.1-1935 Industrial Sanitation in Manufacturing Establishments, Safety Code for *Am. Std.***
- Z4.2-1935 Drinking Fountains, Specifications for *Am. Std.***
- Z4.3-1935 Sanitary Privy, Specifications for (Supplement No. 108 to the Public Health Reports) *Am. Rec. Practice***
- Z5 Ventilation Code *Standard Under Development***
Scope: Standards for air conditions for places of human occupancy; where the primary consideration is the control of temperature, humidity, air motion and odors; where the primary consideration is the control of air pollution or contamination not removable at the point of its production or issuance, in industrial, manufacturing or construction operations.
Sponsor: Am. Soc. of Heating and Ventilating Engrs.
Chairman: W. H. Driscoll, Thompson-Starrett Co., 250 Park Ave., New York, N. Y. (Am. Soc. of Heating and Ventilating Engrs.)
Secretary: Cyril Ainsworth, American Standards Association, 29 W. 39th St., New York, N. Y.

³A draft standard has been prepared and is available for comment. It has not yet been submitted to the ASA.

Safety Code Committees Include Many Interests

Safety codes are one of the most important activities of the American Standards Association, not only because of their influence in reducing human suffering and loss of life, but because through the reduction of accidents they also reduce the cost to employers of lost time, compensation, and high insurance rates.

Representative of as wide a variety of interests as are the committees working on mechanical projects, those on safety codes include medical experts, insurance company representatives, and government regulatory bodies, as well as industrial interests.

One typical safety code committee, which has done an especially effective piece of work in preparing and keeping up-to-date safety provisions for the hazardous abrasive wheel equipment is working under the administrative guidance of the Grinding Wheel Manufacturers Association and the International Association of Industrial Accident Boards and Commissions.

This Sectional Committee on the Safety Code for the Use, Care, and Protection of Abrasive Wheels (B7) is organized as follows:

A. Rousseau, Grinding Wheel Manufacturers Association, Secretary

Grinding Wheel Mfrs. Assn. (Sponsor), L. L. Byers, George W. Chormann, F. R. Henry, John R. Kempf, A. Rosseau, H. G. Weinland

International Assn. of Industrial Accident Boards and Commissions (Sponsor), H. G. Ehret, R. McA. Keown, John P. Meade, John Roach

Am. Foundrymen's Assn., F. H. Elam

Am. Soc. of Mechanical Engrs., W. B. Gardiner

Am. Soc. of Safety Engrs.—Engineering Section—

Nat. Safety Council, G. E. Sanford

Am. Steel and Wire Co., H. J. Weeks

International Assn. of Machinists, H. W. Brown

International Harvester Co., V. B. Hunter

Metal Polishers, Buffers and Platers of North America, G. J. Speidel

Nat. Assn. of Mutual Casualty Cos., S. E. Whiting

Nat. Bur. of Casualty and Surety Underwriters, J. J. Sheridan, J. P. Joice (alt.)

Nat. Founders Assn., G. E. Sanford

Nat. Machine Tool Builders Assn., H. W. Dunbar

Nat. Metal Trades Assn., Frank P. Brown

Nat. Safety Council, W. Dean Keefer

Otis Elevator Co., F. M. Ward

Soc. of Automotive Engrs., A. J. Gifford

U. S. Dept. of Commerce, Nat. Bur. of Stds., H. L. Whittemore

U. S. Dept. of Labor, Sven Kjaer

U. S. Treasury Dept., Bur. of the Public Health Service, E. A. Winslow

Z9 Exhaust Systems, Safety Code for Standard Under Development

Scope: Standards for the design, operation and maintenance of equipment to provide a safe atmosphere by removing harmful substances from their point of production or issuance and by safely disposing of such substances.

Sponsor: International Assn. of Industrial Accident Boards and Commissions

Chairman: John Roach, Dept. of Labor, 571 Jersey Ave., Jersey City, N. J. (International Assn. of Governmental Labor Officials)

Secretary: Cyril Ainsworth, American Standards Association, 29 W. 39th St., New York, N. Y.

Fundamentals Relating to the Design and Operation of Exhaust Systems (Preliminary Edition 1936)

Z10 Letter Symbols and Abbreviations for Science and Engineering

Scope: Standardization of letter symbols and signs for equations and formulas, and abbreviations for use in publications.

Sponsors: Am. Assn. for the Advancement of Science; Am. Inst. of Electrical Engrs.; Am. Soc. of Civil Engrs.; Am. Soc. of Mechanical Engrs.; Soc. for the Promotion of Engineering Education

Chairman: J. F. Meyer, Nat. Bureau of Standards,

Washington, D. C. (Am. Inst. of Electrical Engrs.)

Vice-Chairman: S. A. Moss, General Electric Co., West Lynn, Mass. (Soc. for the Promotion of Engineering Education)

Secretary: H. W. Samson, General Electric Co., Schenectady, N. Y. (Nat. Electrical Mfrs. Assn., alt.)

Z10a-1932 Mechanics, Structural Engineering and Testing Materials, Symbols for Am. Std.

Z10b-1929 Hydraulics, Symbols for Am. Tent. Std.

Z10c-1931 Heat and Thermodynamics, Symbols for Am. Tent. Std.

Z10d-1930 Photometry and Illumination, Symbols for Am. Std.

Z10e-1930 Aeronautical Symbols Am. Tent. Std.

Z10f-1928 Mathematical Symbols Am. Std.

Z10g1-1929 Electrical Quantities, Letter Symbols for (AIEE 17g1-1928) Am. Std.

- Z10g2-1933** Graphical Symbols Used for Electric Power and Wiring, Standards for (AIEE 17g2-1934) *Am. Tent. Std.*
- Z10g3-1933** Graphical Symbols Used for Radio, Standards for (AIEE 17g3-1934) *Am. Tent. Std.*
- Z10g5-1933** Graphical Symbols Used for Electric Traction Including Railway Signaling, Standards for (AIEE 17g5-1934) *Am. Tent. Std.*
- Z10g6-1929** Graphical Symbols for Telephone and Telegraph Use (AIEE 17g6-1929) *Am. Tent. Std.*
- Z10h-1930** Navigational and Topographical Symbols (*Publication deferred*) *Am. Tent. Std.*
- Z10i-1932** Abbreviations for Scientific and Engineering Terms *Am. Tent. Std.*
- Z14** Drawings and Drafting Room Practice (Exclusive of Architectural Drawings), Standards for
Scope: Classification of and corresponding nomenclature for drawings in accordance with their purpose, method of representation of the subject, including arrangement of views and sections, use of lines of different kinds and thickness, indication of dimensions, tolerances, and fits, tapers and slopes, and surface or finish, symbols for elements, indication of materials by cross-hatching, arrangement of borderline, title, part list, notes, changes, and revisions, method of folding and punching, kinds and sizes of lettering, figures, and symbols, scales of reduction and enlargement, sizes of drawings and filing cabinets, width of rolls of paper and cloth, size of drafting equipment and tools, specifications of materials to be used for drawings and drafting, exclusive of architectural drawings.
Sponsors: Am. Soc. of Mechanical Engrs.; Soc. for Promotion of Engineering Education
Chairman: Franklin DeR. Furman Stevens Inst. of Technology, Hoboken, N. J. (Soc. for Promotion of Engineering Education)
Secretary: Carl W. Keuffel, Keuffel & Esser Co., 2nd and Adams Sts., Hoboken, N. J. (Mfrs. Group)
- Z14.1-1935** Drawings and Drafting Room Practice, Includes Arrangement of Views, Line Work, Dimensioning, Sheet Sizes, and Lettering *Am. Std.*
- Z14.2-1935** Drawings and Drafting Room Practice, Graphical Symbols *Am. Std.*
- Z14a** Paper and Cloth, Specifications for
- Z15** Graphic Presentation, Standards for
Scope: Revision of the classification of industries presentation of business and other data.
Sponsor: Am. Soc. of Mechanical Engrs.
Chairman: Willard T. Chevalier, McGraw-Hill Publishing Co., 330 W. 42nd St., New York, N. Y. (Am. Soc. of Civil Engrs.)
Secretary: George E. Hagemann, 13 Astor Pl., New York, N. Y. (Am. Soc. of Mechanical Engrs.)
- Z15.1-1932** Engineering and Scientific Charts for Lantern Slides *Am. Rec. Practice*
- Z15a** Terminology in Graphic Presentation
- Z15b** Time Series Charts
- Z15c** Non-Time Series Charts
- Z15d** Survey of Current Practice
- Z15e** Engineering and Scientific Graphs
- Z16** Methods of Recording and Compiling Accident Statistics, Standardization of
Scope: Revision of the classification of industries in the standard plan for accident statistics of the International Association of Industrial Accident Boards and Commissions, definitions of terms, the form of reporting accidents, the computation of accident rates, and the classification of causes of accidents, and also the consideration of possible revision of other features of the plan.
Sponsors: International Assn. of Industrial Accident Boards & Commissions; Nat. Council on Compensation Insurance; Nat. Safety Council
Chairman: Leonard W. Hatch, 425 Pelham Manor Rd., Pelham Manor, N. Y. (New York State Industrial Board and International Assn. of Industrial Accident Boards & Commissions)
Secretary: Cyril Ainsworth, American Standards Association, 29 W. 39th St., New York, N. Y.
- Z16.1** Compiling Industrial Injury Rates, Method of
- Z17** Preferred Numbers
Scope: Development of a system of numbers in geometric series for use in standardization.
Autonomous Sectional Committee
Chairman: R. E. Hellmund, Westinghouse Electric and Manufacturing Co., East Pittsburgh, Pa. (Am. Inst. of Electrical Engrs.)
Secretary: John Gaillard, American Standards Assn., 29 W. 39th st., New York, N. Y.
- Z17.1-1936** Preferred Numbers *Am. Std.*
- Z18** Speeds of Machinery, Standardization for *Standard Under Development*
Scope: Standardization of speeds of machinery and of such elements for mechanical power transmission as are functions of said speeds.
Sponsor: Am. Soc. of Mechanical Engrs.
Temporary Chairman: Allan E. Hall, Allis Chalmers Manufacturing Co., Milwaukee, Wis. (Machinery Builders Soc.)
- Z25** Rounding Numerical Values, Rules for *Standard Under Development*
- Z33-1935** Fire Protection Code for Blower and Exhaust Systems *Am. Std.*
Scope: General rules for the safeguarding of all types of blower systems from the standpoint of fire hazards, including exhaust fans for heating and ventilating systems and for removal of dust, vapors and refuse; the control of such fans; systems of air conveyors; the construction, operation and maintenance of ducts and all related equipment; and the disposal of the materials conveyed.
Proprietary Sponsor: Nat. Fire Protection Assn.

Court Decides Against State Truck Regulations

A decision in the interest of national standardization was handed down by the Federal Circuit Court of Appeals, Columbia, South Carolina, in January. The opinion holds that the state law limiting the size and weights of motor trucks in interstate commerce is an "unreasonable burden" upon such commerce so far as the hard-surfaced main highways of the state are concerned.

The court granted the motor truck operators a permanent injunction enjoining the state from enforcing its limitations on the standard concrete and asphalt paved roads. This order permits trucks heavier than 20,000 pounds and wider than 90 inches, the limits specified by the state's law, to operate on these roads.

It was brought out that South Carolina is the only state having a width limitation of 90 inches, other states permitting 96 inches.

Requirements for commercial vehicles used in interstate commerce and passenger traffic are now being completed by the Bureau of Motor Carriers of the Interstate Commerce Commission to help bring about national uniformity. The safety requirements of the Bureau were prepared with the cooperation of the ASA.

Automobile Manufacturers Association Joins ASA

The Automobile Manufacturers Association, trade association of the automobile industry, has joined the ASA as a Member-Body.

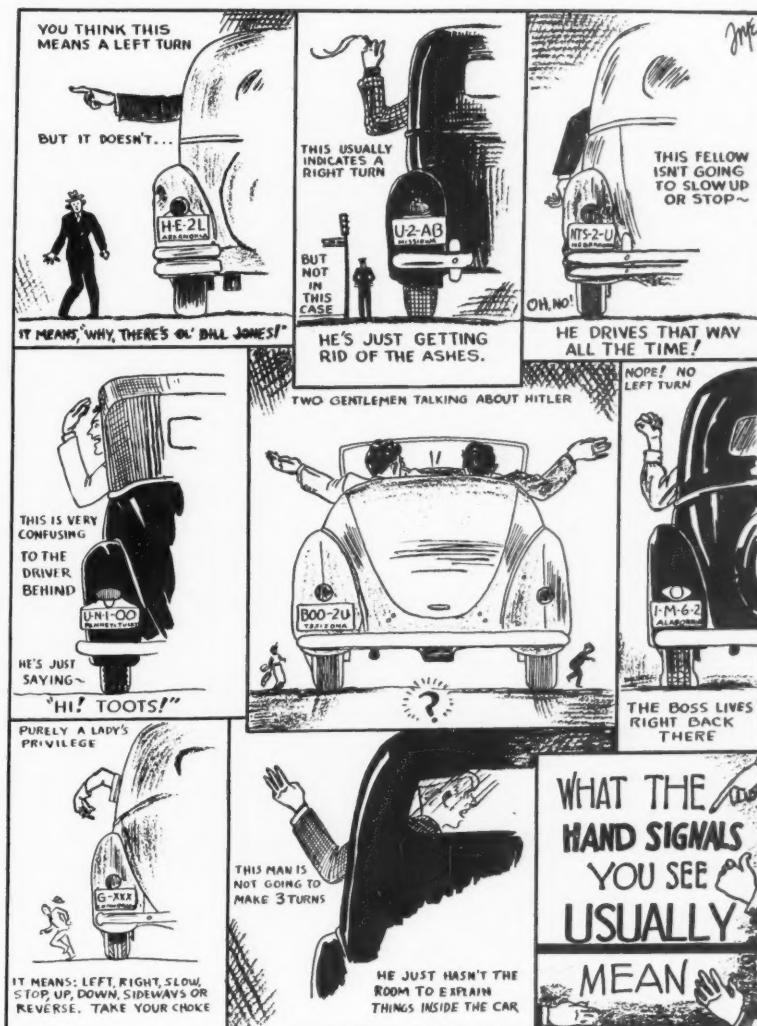
The AMA will be represented on the Standards Council of the ASA where it will have a voice in determining policies on standards and in approving or disapproving individual standards as they are presented to the ASA. It will also be eligible to nominate a member on the Board of Directors, which determines general operating policies of the Association.

In addition to the mechanical standards, applica-

ble to the work of any manufacturer, many of the phases of the safety code program have a particular bearing on automobile problems. An American Standard for safety glass for use in automobiles was developed last year. Recently, a committee working under the procedure of the American Standards Association recommended safety standards to be used by the Motor Bureau of the Interstate Commerce Commission in its new national regulations for motor trucks and busses. Standards on which to base inspection of motor vehicles in operation on the roads are now being developed.

Fifty-eight national organizations are now Member-Bodies and Associate Members of the American Standards Association.

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